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Implementing IT-Based Succession Planning in University IT Units: Enhancing Operational Continuity

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Abstract

One of the accredited universities in Indonesia is committed to quality education through the use of information technology. However, the university's IT unit often experiences vacancies in key positions due to high employee turnover, which impacts workload and business processes, especially in handling Request for Change (RFC). While application X supports performance appraisals, it has not been optimized for succession planning. This study explores the potential of application X as a tool for succession planning by integrating the Rothwell and Integrated Talent Management models. The design includes identifying key positions, assessing candidate competencies, preparing development plans, and establishing a structured knowledge transfer system to sustain organizational leadership. Additionally, integrating Large Language Models (LLMs) like ChatGPT is expected to enhance assessment objectivity, provide individual development recommendations, and ensure a more effective leadership transition. The system's role in improving assessment objectivity is vital for unbiased, data-driven decisions, while its contribution to leadership transitions ensures a smoother, more systematic process for maintaining leadership continuity. With features such as candidate search and staff assessment, the system is expected to help organizations select the right replacement and maintain university operations.

Keywords: Succession Planning, Talent Management, Information Technology, Large Model Language (LLM)

1. INTRODUCTION

One of the universities in Indonesia that has received an 'Excellent' accreditation from the National Accreditation Board for Higher Education (BAN-PT) is committed to providing quality education. As an institution that continues to grow, this university utilises information technology to support operational activities and business processes managed by the Information Technology (IT) Unit. In the context of BAN-PT accreditation, the assessment covers various strategic aspects, including human resource management and continuous competency development [1]. One of the challenges faced by IT units is the high turnover rate in key

positions, which has a direct impact on the operational performance and efficiency of the organisation.

The high turnover rate in key positions in IT units is an issue that affects the smooth running of business processes, especially in handling Requests for Change (RFC) which require specialised skills. According to a study by [2], [3], high turnover in key IT positions can result in decreased productivity and increased operational costs, which in turn affect the achievement of the long-term goals of educational institutions. Time-consuming and costly recruitment and training processes exacerbate this situation, as they take a long time to fill vacant positions and restore the disrupted work capacity of the team [4].

Decreased operational efficiency due to prolonged job vacancies can also cause delays in achieving targets and force existing resources to work harder, potentially affecting staff welfare and motivation. For this reason, a more planned human resource management strategy is needed, especially in overcoming employee turnover and ensuring smooth operational continuity. One solution that can be implemented is succession planning, which can help organisations fill vacant positions quickly, maintain operational continuity, and maintain optimal performance levels [5]. However, even though the IT unit has been using application X to conduct employee performance appraisals, the application has not been fully optimised to support succession planning. Application X is currently only used to assess individual performance, without considering key factors relevant to determining potential leaders or replacements in strategic positions. Therefore, this study aims to explore the potential of application X as a tool in succession planning by adding relevant parameters, so that this application can provide a more effective basis for leaders in determining the right replacement and maintaining the smooth operation of the university.

With the optimisation of application X to support succession planning, it is hoped that the process of identifying key positions, assessing the competence of candidates, and developing knowledge transfer plans can be carried out in a more structured and systematic manner. Integration with more comprehensive talent management models, including the use of technologies such as Large Language Models (LLMs), is expected to increase objectivity in assessment and ensure a more effective and efficient leadership transition.

2. METHODS

This study uses the Design Science Research Methodology (DSRM) method, which is an approach applied in information systems to design and evaluate artefacts to solve identified problems. DSRM combines principles, practices, and procedures aimed at guiding researchers in creating innovative solutions. This

method follows a structured process, including the stages of problem identification, goal setting, design and development, demonstration, evaluation, and communication of research results, as shown in Figure 1. The main objective of DSRM is to contribute to both theoretical knowledge and practical application in the field of technology and information systems [6].

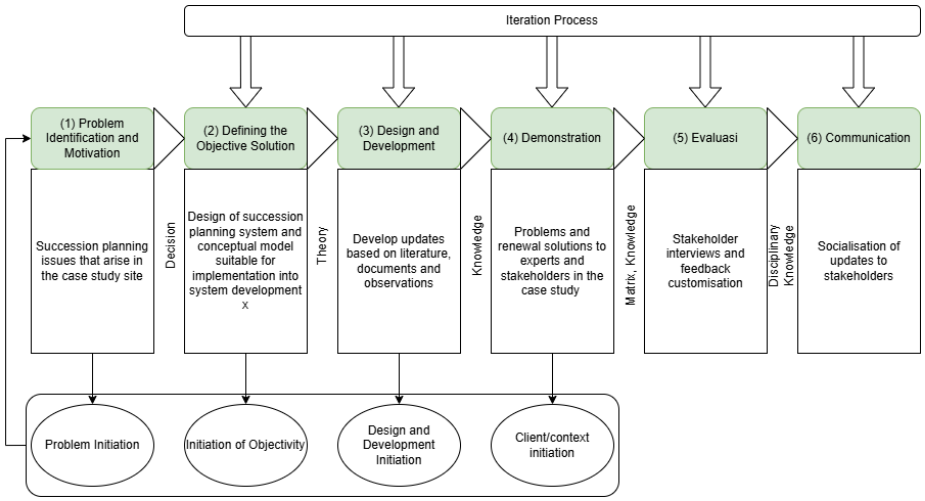

Figure 1. Literacy Process

The stages in the conceptual model of Design Science Research Methodology for Information Systems Research begin with Problem Identification and Motivation, which is to clearly define the problem and demonstrate the importance of the solution to encourage the application of the research results. In this case, the focus is on the application of succession planning. Next, in Defining Objective Solutions, the researcher determines a solution based on the problem and knowledge of possible outcomes, such as designing a succession planning system suitable for system X.

Design and Development involves the creation of research artefacts that make new contributions, including the design of the function and architecture of the artefact, and requires related theory and literature. Demonstration is then carried out by testing the artefact to solve the problem through experiments or case studies, which show how the artefact works in achieving a solution. After that, the Evaluation assesses the effectiveness of the artefact in solving the problem by comparing the results against the set objectives, through performance metrics or client feedback, such as interviews and adjustments based on feedback in this study. Finally, in the Communication stage, the researcher conveys the entire research process - including the definition of the problem, artefact, benefits, and results to professionals and academics and socializes the results to stakeholders [7]. The following are details of each step of the method used.

2.1. Problem Identification and Motivation

The results of the study obtained by researchers through a literature study include the collection, analysis, and synthesis of various academic references, such as scientific journals, books, research reports, and other relevant publications. This literature study aims to broaden understanding of the concepts, theories, and results of empirical research related to the topic of succession planning. In addition, this study uses a literature review to compare the succession planning presented in several previous studies with the succession planning observed in the case study conducted, which allows for a more comprehensive analysis of their similarities, differences, and potential improvements.

2.1.1. Succession Planning

Succession planning is a strategic approach to talent management that enables organisations to proactively identify, develop and retain individuals with the skills, knowledge and abilities needed to fill key leadership and important roles in the organisation [7], [8], [9]**.** The importance of succession planning is especially felt in IT companies because it can improve employee performance through career development and assessment, as well as build positive relationships between organisations and employees, thus motivating them to innovate [10].

Comprehensive planning allows for a smooth leadership transition, maintaining organisational stability. There are several factors that influence succession planning, namely strategy, knowledge management, organisational culture, leadership development opportunities, and management commitment, as well as considering attitudes, norms, and behavioural control[11], [12]. Figure 2 is important steps in the succession planning process that ensure the continuity of key roles within the organisation [13].

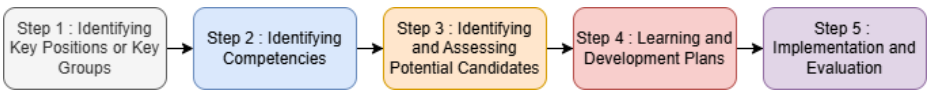

Figure 2. Succession Planning Stages

The succession planning stage begins with Identifying Key Positions or Key Groups, which is determining key positions based on criticality and retention risk. Critical positions have a major impact if they are vacant, and retention risk includes positions that are prone to being left behind, for example due to retirement. Factors to consider include strategic goals, estimated retirement, turnover rate, position vacancies, programmed changes, and specialized skill requirements. Identifying Competencies is the next step, where the organization tailors the competencies required for a particular position to align with the objectives. This

involves reviewing job descriptions, interviewing employees, supervisors, clients, group discussions, and reviewing development programmed.

Identifying and Assessing Potential Candidates focuses on assessing employees based on core competencies to prepare them for future roles, using methods such as interviews, CV reviews, work simulations, and talent review meetings, while maintaining transparency to avoid morale decline. Once a candidate is selected, Learning and Development Plans ensure access to development opportunities that are directed according to the candidate's interests and potential. Implementation and Evaluation evaluates the effectiveness of the succession planning process by monitoring the relationship of inputs, activities, outputs, impact on objectives, functional strengths and weaknesses, and cost-benefit analysis.

2.1.2. Talent Management

Talent management is a systematic strategy for identifying, recruiting, and retaining talented employees in an organization, including talent identification, performance evaluation, career development, and retention policies [14]. One aspect of talent management is succession planning, which serves to identify and develop internal talent to ensure candidates are ready to fill leadership roles, reduce the risk of leadership turnover, and maintain organizational stability [15]. Talent management practices such as training, performance appraisal, and retention strategies support succession planning and organizational sustainability. Through an objective and transparent process, organizations can minimize bias and increase employee trust. A structured talent management system creates a pool of talent ready to fill key positions at the right time [16]. Effective talent management also improves employees' professional skills, which supports succession planning. By developing internal talent, organizations can reduce the risk of losing key personnel and maintain continuity of leadership [17]. Succession planning, as part of talent management, focuses on planning replacements for key positions, while talent management as a whole encompasses broader strategies for managing and developing talent across the organization, including recruitment, training, career development and retention.

2.1.3. Talent Management Conceptual Framework

The Figure 2 shows the conceptual framework of talent management that illustrates how the practices of succession planning, training and development, performance appraisal, and talent retention are interconnected and influence talent management. Talent management acts as a link that impacts the sustainability of the organisation. The purpose of this practice is to find future leaders, improve employee skills, and retain talent. However, in Nigeria, there are challenges in talent management, such as ineffective succession planning, lack of continuity when

leaders leave, and difficulties in implementing talent management strategies. In addition, a lack of training for potential successors and the limited application of succession planning theory hinders employees' readiness for leadership positions, thus demonstrating the need for a more integrated approach to ensure the sustainability of the organisation [15].

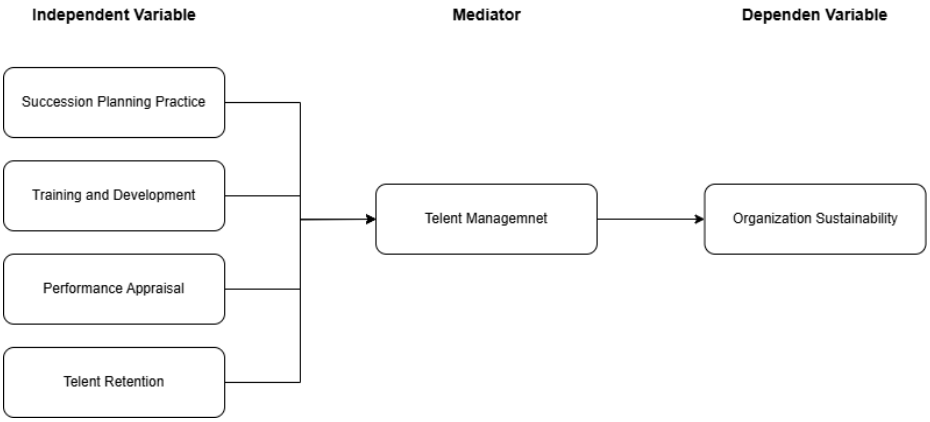

Figure 3. Talent Management Conceptual Framework

2.1.4. Succession Planning Conceptual Model

The conceptual framework of talent management in succession planning involves several key elements to effectively develop and place future leaders, as shown in Figure 4 [18]:

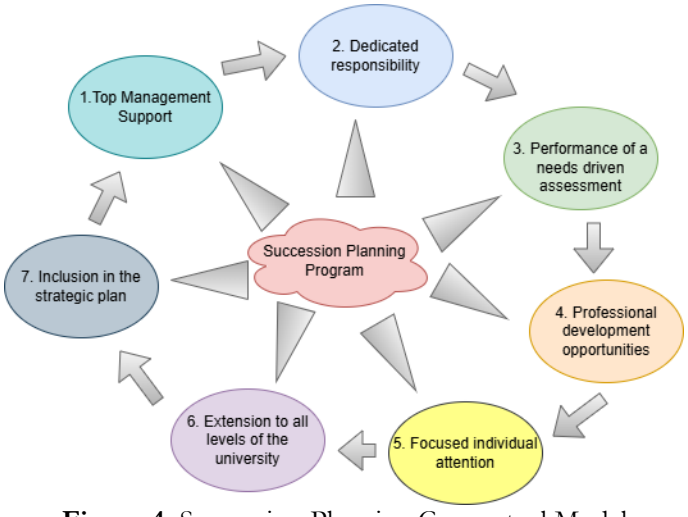

Figure 4. Succession Planning Conceptual Model

Talent management begins with top management support, ensuring that the necessary resources and strategic focus are dedicated to the programmed. A specific individual or team must be assigned responsibility to oversee and manage the entire talent management process. Conducting a needs-driven assessment is crucial to identify the organization's and employees' needs, allowing the development programmed to be tailored accordingly. Additionally, offering professional development opportunities, such as training programmed, helps enhance the skills of potential leaders. It is also important to provide focused individual attention by creating personalized development plans that align with the strengths of each potential leader. The talent management programmed should extend to all levels of the university, ensuring a comprehensive approach that reduces reliance on external recruitment. Finally, incorporating talent management into the organization's strategic plan ensures alignment with long-term goals and fosters a proactive approach to leadership development.

2.1.5. Rothwell's Seven-Pointer Star Model

Henri Fayol emphasized that succession planning is vital to placing the right people in the right positions and preventing mistakes in the organization. This requires investment in training to prepare individuals to take on leadership roles, according to Rothwell's 'seven-pointer star' model, which outlines seven steps for effective succession planning and management [19], as shown in Figure 5.

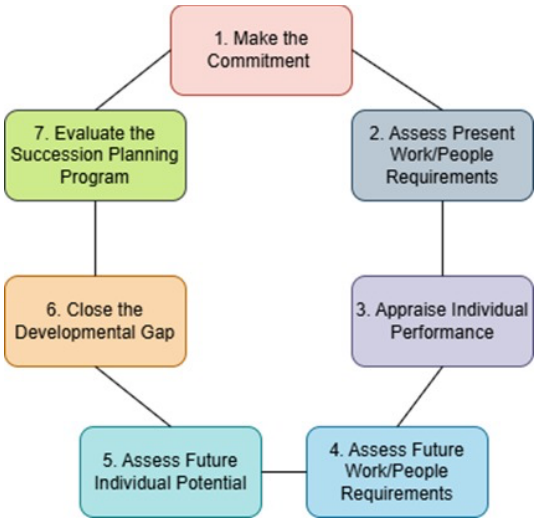

Figure 5. Seven Steps of Succession Planning

The process of succession planning begins with making a commitment, where the organization's leader must be fully dedicated to implementing succession planning

and understand the importance of this process. Next, the organization needs to assess the current work environment and position requirements to evaluate the skills that are necessary. Individual performance should then be appraised to identify potential candidates who could take on future leadership roles. Following this, it's crucial to assess future work and people requirements by forecasting organizational needs and the skills required to meet the challenges ahead. The potential of individuals must also be evaluated to determine those who are capable of growing into leadership positions in the future. To close the developmental gap, the organization should provide training opportunities to help prospective leaders acquire the skills they need. Finally, it is important to regularly evaluate the effectiveness of the succession planning program to identify areas for improvement and ensure that it aligns with the leadership needs of the organisation.

2.1.6. Integrate Talent Management Framework

The Integrated Talent Management model by Silzer and Dowell (2010) describes a comprehensive process in talent management in organisations to achieve sustainability and competitive advantage. This model emphasises the concept of 'Talent Stewardship', which consists of four main components: Identity, Assess, Develop, and Retain. Figure 6 is an explanation of each component [20].

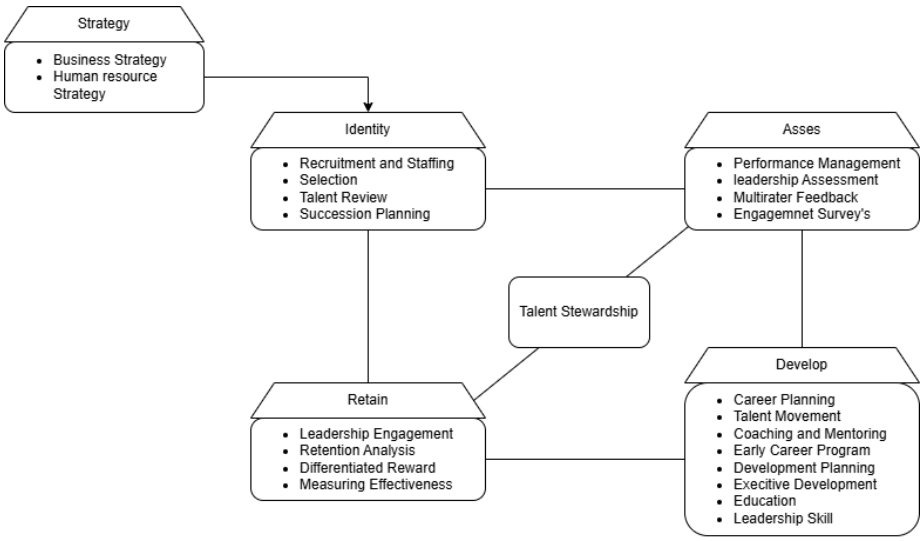

Figure 6. Integrated Talent Management

Identity aims to identify employees who have the potential to develop and contribute to the organization, through recruitment and selection, talent review, and succession planning to ensure the right employees are in the right roles. In the

Assess stage, the organization assesses employee performance and potential through performance management, leadership assessments, multirotor feedback, and engagement surveys, which help the organization understand the strengths and development areas for each individual. After that, in the Develop stage, the organization provides career development, talent movement, training, mentoring, and early career programmed to support the development of skills and the readiness of employees in larger roles in the future. Finally, Retain involves strategies to retain key employees through leadership involvement, retention analysis, differentiated rewards, and effectiveness measurement, which aim to ensure talented employees remain motivated and committed to the organization.

2.1.7. Current Succession Planning Flow

In the IT unit, when an employee submits his resignation, the first step to be taken is to inform his first superior. After receiving this information, the first superior will begin the selection process for a replacement candidate. The selection of candidates is based on several criteria, including length of service, position level, attitude, skills, and knowledge. However, these criteria are often subjective, depending on the supervisor's assessment and recommendations from other colleagues. This can lead to a mismatch between the selected candidate and the vacant position.

Once a candidate has been selected, the result will be discussed with the team that will work with the candidate. If the team agrees with the candidate's choice, the supervisor will inform the candidate of the result. This process is not limited to notification, but also involves an effort to ask the candidate for their approval to be willing to fill the vacant position. If the candidate agrees, there will be a knowledge sharing session between the resigning employee and their potential replacement. This process lasts for several days or until the outgoing employee is still in the same workplace.

However, challenges arise when the selected candidate is reluctant to take over the position. In this case, the employer must look for a new candidate, which can extend the time needed to fill the vacant position. In addition, this turnover process is often inefficient, because employees who should no longer have responsibilities in their old positions are still required to train or develop their potential successors. Thus, it is very important to have an effective succession planning system. This system can help in recommending the right candidate based on objective criteria and relevance to the vacant position. With this system, the candidate selection process can be carried out more efficiently and in a more structured manner, minimizing the time needed to fill vacant positions and reducing the workload of employees who have to train their potential successors.

2.1.8. Existing Business Process of Application X

The X application process flow begins with the human resources unit which opens the assessment period for each unit at the University. After the assessment period is opened, each unit, especially the IT unit which is the object of research, is required to set targets according to the roles and responsibilities of each staff member. This process involves the (structural) supervisor who will formulate targets for his or her staff to achieve over the next 6 months. Once the targets have been agreed upon and stored in the system, each staff member will receive a list of targets they need to achieve during the assessment period.

Furthermore, each staff member is required to upload evidence of the realization of the targets they have worked on, which can be in the form of documents, reports, or other relevant forms of evidence. After the evidence has been uploaded, the (structural) supervisor will validate the data that has been entered to ensure that all the evidence presented is correct and meets predetermined criteria. Once the validation is complete, the supervisor will assess the staff's performance based on the evidence that has been uploaded. In addition, the supervisor will also evaluate the work attitude of each staff member during the assessment period. Once all the assessment processes are complete, each staff member will receive the assessment results from their supervisor during the period.

2.1.9. Gap Analysis

The following are details of the gaps based on a literature study.

1) Business in Zimbabwe: Succession planning is important for business continuity, especially in an unstable environment. Effective succession planning has been shown to be related to business continuity and growth, with a focus on identifying future leadership, developing skills, and timing transitions. Challenges include political instability, limited resources, and cultural resistance [21].
2) Nursing Sector: Succession planning in nursing aims to address staff shortages, which are crucial to maintaining the operation and quality of health services. Obstacles such as a lack of formal processes and training programs often interfere with implementation. Recommendations include structured mentoring, clear career paths, and leadership training integrated into nursing education [22].
3) Higher Education in Cavite, Philippines: Organizational culture plays an important role in the success of succession planning in educational institutions. This study emphasizes the importance of consistent and objective selection criteria and alignment between succession planning and overall institutional goals. The recommendation is to strengthen a

supportive organizational culture and improve the leadership selection process [23].

4) Work Organization: The combination of succession planning and replacement planning is important to maintain organizational stability and performance. Succession planning prepares high-potential employees for leadership, while replacement planning provides a backup for critical roles. A structured, HR-led approach helps improve retention and job satisfaction [24].
5) Long-Term Organizational Sustainability: Effective management succession planning, which involves classifying employees based on potential and performance, has been shown to contribute positively to organizational sustainability. Recommendations include the implementation of strategic HRM, career development, and investment in leadership programmed [25].
6) Esfahan Steel Company: The implementation of a structured succession management system is able to improve organizational performance with a focus on meritocracy (a system in which someone is selected or promoted based on their abilities, achievements, and performance, not because of relationships, age, or other factors unrelated to qualifications), candidate evaluation, and gap analysis. Recommendations include the development of a long-term policy framework, training, and collaboration between industry and universities [26].

Based on observations, succession planning in IT units is more informal, mainly carried out through direct appointments when there are vacancies or employee rotations. The absence of a structured succession planning system results in dependence on intuition and knowledge of certain individuals, thus potentially reducing the effectiveness of the succession process in the long term.

1) Subjectivity in Candidate Selection: In contrast to studies that emphasize objective criteria and structured programmed, the succession process in IT units is often subjective, relying on personal judgement and peer recommendations. This subjectivity can lead to a mismatch between the selected candidate and the required role, as outlined in studies on Zimbabwean business and higher education, which emphasize the importance of selection based on judgement.
2) Absence of Formal Structure and Smooth Process: The literature supports a succession planning system with a clear transition time to minimize obstacles. Observations in the IT unit show that when candidates refuse, the replacement process is hampered. This gap points to the need for a more automated and structured system to speed up the replacement process, as in the study at Esfahan Steel Company.
3) Gaps in Training and Development: Studies on succession in nursing and work organization emphasize the importance of ongoing training and mentoring to develop potential leaders. The current process in the unit

relies more on brief knowledge sharing from outgoing employees, without any long-term development programmed, which indicates the need for more structured training.

4) Alignment with Organizational Objectives and Evaluation: The literature suggests that succession planning is aligned with the organization's strategic objectives and evaluated regularly. However, in the IT unit, the current succession process is not formally linked to the unit's strategic objectives, and there is no routine evaluation to assess the success of the succession process. This shows that the unit needs a better succession planning system, which not only supports day-to-day operations but also helps achieve the organization's long-term goals. A relevant example is that applied in higher education institutions and companies such as the Esfahan Steel Company, which has a more strategic succession system.

From the explanation above, it can be concluded that succession planning in IT units needs to be improved to ensure continuity and the readiness of more reliable leadership. Currently, the succession process tends to be informal and reactive, without a structured system for the identification, training, and development of successor candidates, potentially hampering the continuity of unit performance when there is a change in key personnel. Implementing a more formal succession planning system, supported by a competency and performance database, automated candidate profiles, and a continuous development programmed, will help organizations mitigate the risk of critical position vacancies and increase generational transfer effectiveness. Thus, this unit can better deal with organizational dynamics and support the organization's long-term strategic goals.

2.2. Defining the Objective Solution

Focus on improvement efforts or recommendations based on problem identification results. The following are objective solutions obtained:

1) Subjectivity of Selection
   Reduce subjectivity by developing a technology-based selection system that utilizes performance and potential data [26], [23].
2) Lack of Training
   Implement an ongoing training programmed with a focus on developing technical and leadership competencies[22].
3) Absence of a Formal System
   Design a more automated and structured system to manage the succession process with a clear transition schedule [26] and involve HR to create a formal framework with a reserve of candidates for critical positions [24].

2.3. Design and Development

In the design and development stage, researchers design a system or model that is in line with the findings obtained from the previous stage. This design includes the development of concepts and strategies that have been analysed, as well as adapted to the needs found during the research. A more in-depth explanation of design and development will be discussed in the Results and Discussion chapter, where details of the approach taken and the development process are comprehensively explained.

2.4. Demonstration

Furthermore, in the demonstration stage, the researcher demonstrates the findings to stakeholders to obtain feedback and constructive input. This demonstration aims to validate the design and development results that have been carried out, and to ensure that the proposed solution is acceptable and applicable in a practical context. Discussions with stakeholders also allow researchers to gain a better understanding of practical implementation and potential for further improvement.

2.5. Evaluation and Communication

The evaluation and communication stage includes a comprehensive evaluation of the effectiveness and success of the implemented design, both in the form of a design system and the collection of feedback from relevant parties. Researchers evaluate the results of the implementation to ensure that the solutions developed meet the objectives set. In addition, the results of this evaluation are clearly communicated to stakeholders, both through written reports and presentations, to ensure that all parties involved understand the final results of the research and how they can be optimally applied.

3. RESULTS AND DISCUSSION

3.1. IT-Based Succession Planning in University IT Units

Based on literature studies and observations, it was found that succession planning is a strategic approach to ensure a smooth leadership transition and continuity of key positions in an organization. The main focus includes identifying key positions that are vulnerable to vacancies, developing competencies in accordance with organizational objectives, and developing potential employees through tailored training and ongoing evaluation. However, in observation, the succession planning process currently still relies on the subjective assessment of superiors and co-workers, which can hinder the selection of the right candidates. In addition, the knowledge sharing process is considered less efficient if the selected candidates are

reluctant to fill the available positions. Application X, although helpful in target management and performance appraisal, is not yet optimal in supporting succession planning, as it does not yet have a feature that proactively identifies potential candidates based on performance data, competencies, and qualifications. Therefore, a database design and information technology implementation in the form of a RAG System with Large Language Model (LLM) is proposed to identify the right candidates based on relevant data.

The system design for succession planning consists of three main components. First, a competency and performance database that collects data on employee competencies and performance, such as workload, technical skills, work attitude, and training completed. This data is used to identify potential candidates who have the right skills for the needs of upcoming key positions. Second, automated candidate profiling and recommendations, where the system will automatically generate candidate profiles based on objective data such as experience, skills, and performance appraisal results. This system provides recommendations for the right candidate to fill the vacant position, speeding up the candidate search process and reducing dependence on subjective assessments. Third, the potential assessment feature, which allows the first supervisor to assess the skills and abilities of all the staff under his or her responsibility. The data stored in this database can then be used as a reference in the search for the right candidate for the available position.

Figure 7 is a database design to accommodate all information regarding the capabilities of all staff to be entered into the RAG System which combines Large Language Model (LLM). This system is designed to efficiently process and analyse employee competency, performance, and training experience data. By utilising LLM, the system can provide automatic recommendations regarding the most suitable candidates to fill key vacant positions based on objective data and in-depth analysis. In addition, this system will support the employee career development process by providing personalised development plans, as well as ensuring that the organisation can identify and prepare the right potential leaders for the future.

There are several tables in this database design, including: The employees table stores employee data, while employee_skills is used to store employee ability data and assessments given by the first supervisor regarding the skills possessed. The skills table stores data about the capabilities that exist in the organisation, such as MySQL, Laravel, Oracle, and others, which are grouped in the category_skill that stores categories of abilities such as soft skills, hard skills, and attitude. The achievement table stores achievement data held by staff, while roles stores data regarding positions or roles in the organisation. The tasks table contains information regarding tasks in the organisation, which is also organised in workload_assignments to monitor the workload of staff, as well as types which stores task type data, such as main tasks and additional tasks. This design aims to

facilitate the implementation of a structured system in succession planning in organisations.

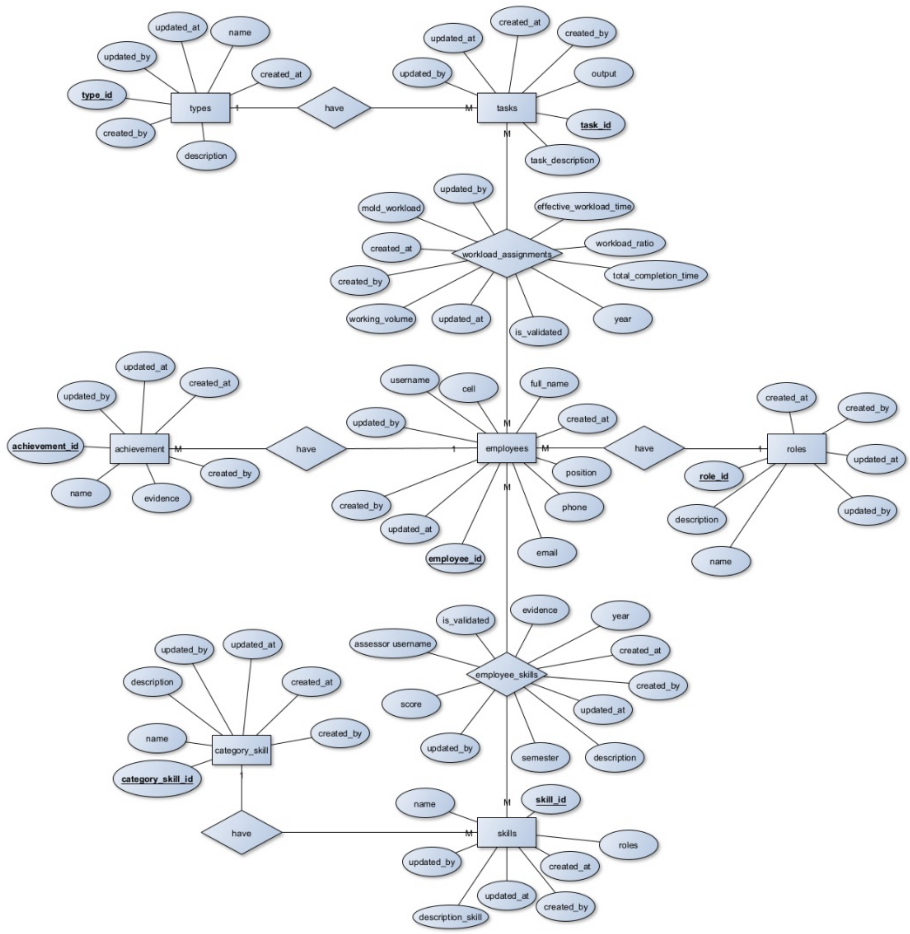

Figure 7. Succession Planning Database Design

RAG systems combine Large Language Models (LLM) with search mechanisms to generate more precise and contextually appropriate answers. With this integration, the system can utilise both structured and unstructured knowledge, which in turn improves clarity and accuracy in providing responses[27]. Retrieval-augmented generation (RAG) is a method that combines various elements, design decisions, and customisations to enhance the capabilities of LLM. The goal is to address issues such as incorrect or outdated information by integrating the information retrieval process with a model that generates text. RAG systems are designed to improve performance on specific tasks, such as checking configuration dependencies, by performing careful evaluation and improvement based on in-

depth research and analysis[28]. LLMs can improve recommendation systems by using advanced thinking capabilities. They improve the accuracy of ranking predictions by performing step-by-step reasoning, taking into account both subjective and objective information. In addition, LLMs can provide clear and reasonable explanations for the recommendations provided [29]. LLM can also understand context and patterns from limited data, so it can still provide relevant recommendations even though there is not much user behaviour data [30]. Figure 8 is an overview of RAG LLM in this study.

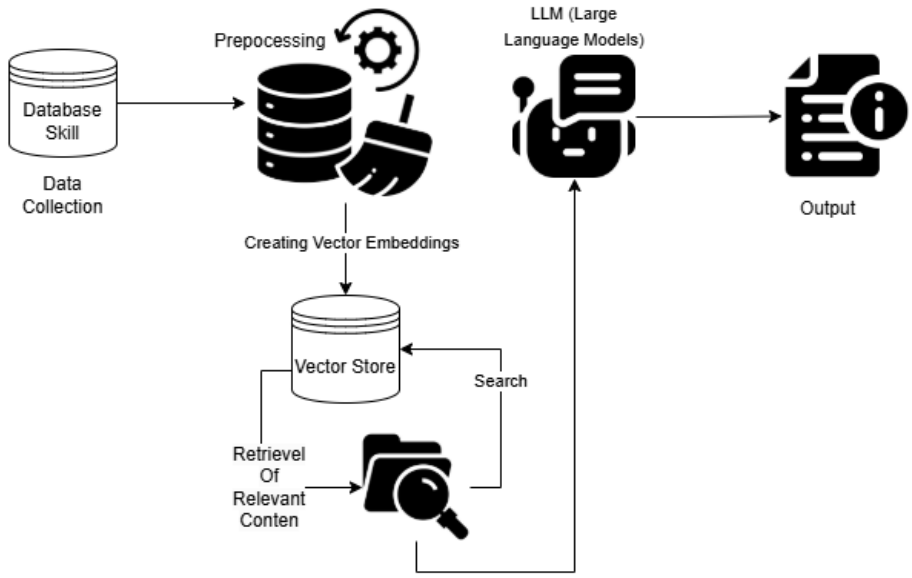

Figure 8. RAG which combines Large Language Model (LLM)

The first step is Data Collection, where data is collected such as the skill assessment data of all staff. Then, Data Preprocessing is carried out to clean and prepare the data so that it is ready for analysis. After that, the data is converted into vector representations through Creating Vector Embeddings, which facilitates information search based on contextual similarities. Next, Retrieval of Relevant Content is performed, where the model searches for and retrieves relevant information from the vector database. Then, the model generates an answer through Generation of Response by LLM, using the information obtained and the added context. Finally, all of this produces an Output, where the system presents an accurate and relevant final answer to the first supervisor.

Figure 9 is a display of the Large Language Model (LLM) where the first superior can ask for suitable candidates to fill the vacant position according to the available

data. Figure 10 is an example of a question that will later be answered by the Large Language Model (LLM) according to the data implemented into the RAG System which combines the Large Language Model (LLM).

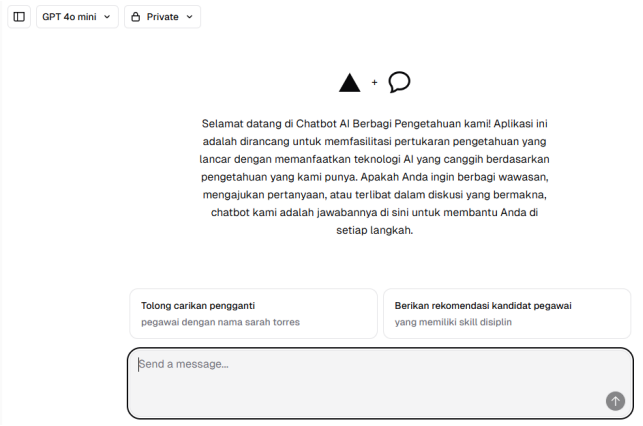

Figure 9. Initial Display of the Large Language Model (LLM)

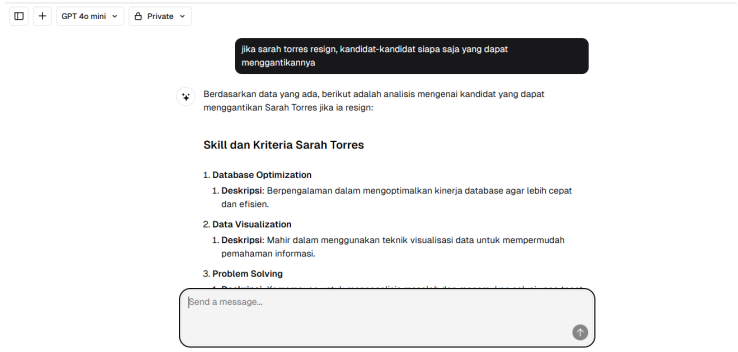

Figure 10. Initial Display of the Large Language Model (LLM) When Responding to Questions

In addition to the description of the Large Language Model (LLM), the following is a more detailed description of the features that will be accessed or performed by each individual according to their role in the system (use case). This description includes actions, access rights, and specific functions designed for each user category.

There are two actors in the above use case, namely the first supervisor and the staff. The first supervisor has a role in assessing, validating, and evaluating the

performance and skills of the staff under his or her responsibility. This includes direct observation of the work performed, assessment of target achievement, and analysis of the abilities and competencies of each staff member. Meanwhile, the staff plays a role in independently inputting their data as part of the validation process by the first supervisor. The data entered covers various aspects, such as the work results that have been achieved, the skills possessed, and the contributions made while working on projects. This process aims to provide a clear picture of individual achievements and ensure that all relevant information is well documented. In addition, this data entry also helps superiors to evaluate performance more accurately, validate the contributions that have been made, and identify future skills development needs. Figure 11 is an overview of the use case.

Figure 11. Use Case Design

Apart from the system design, based on the literature study and the above observation results, the following is a conceptual succession planning design. Based on the models described above, the following can help ensure the continuity of leadership in the organisation. The succession planning process begins by identifying key positions that have a high impact and retention risk, such as

positions in IT units that play a crucial role in product innovation[13]. Once these positions are identified, the next step involves conducting competency evaluations and assessing potential candidates. This includes performance appraisals, in-depth interviews, and job simulations to ensure that candidates possess the appropriate skills and attitudes necessary for the role[13]. Following this, a development and learning plan is created for the selected candidates, incorporating relevant training programs such as project management development, leadership training, or specific technical skills [20]. Additionally, implementing a knowledge transfer system becomes essential, ensuring an efficient knowledge-sharing process through formal documentation and training between resigning employees and their replacement candidates, utilizing a knowledge-sharing platform[31]. Finally, the effectiveness of the succession plan is evaluated by monitoring team satisfaction, candidate performance, and the impact on organizational goals, ensuring that the program aligns with the evolving needs of the organization [32].

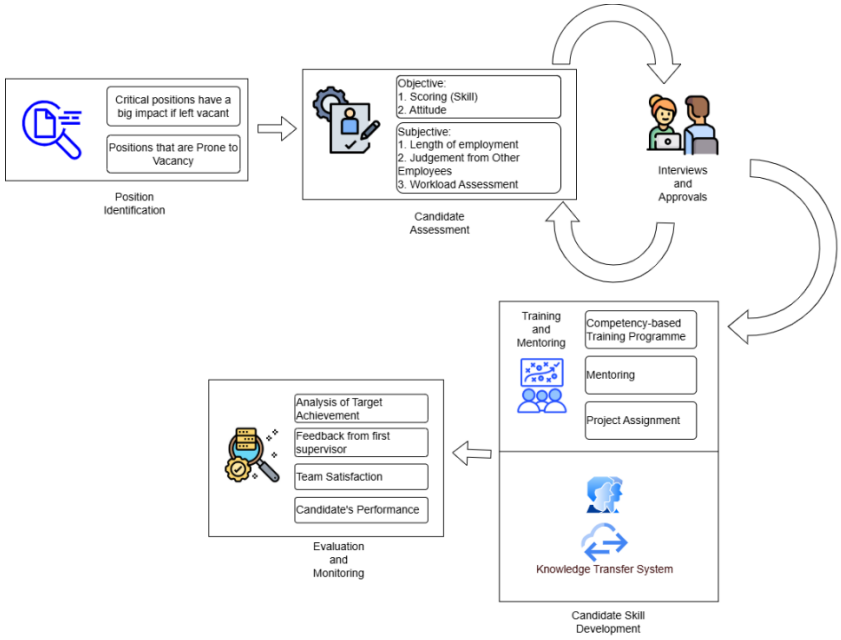

Figure 12. The Proposed Conceptual Succession Planning Design

Figure 12 illustrates a systematic approach to succession planning that includes the process of position identification, candidate selection, skills development, and evaluation to ensure an effective transition in key positions in the organisation: The succession planning process begins with position identification, which involves identifying critical positions that, if left vacant, could have a major impact on the organisation. This includes positions that are prone to vacancy and those

with strategic responsibilities that affect the organisation's sustainability. Once critical positions are identified, the next step is candidate assessment, which evaluates both quantitative and qualitative qualifications. Objective assessments focus on factors like ability and work attitude, while subjective assessments consider aspects such as length of service, peer evaluations, and workload to ensure that candidates are capable of handling the responsibilities of the position. After candidates are selected, interviews are conducted to explore their suitability and potential, followed by approval from relevant parties, including the first supervisor. Subsequently, candidate skill development is undertaken, consisting of competency-based training, mentoring programs, and project assignments to apply acquired knowledge. This is complemented by a structured knowledge-sharing system to facilitate the knowledge transfer process. Finally, the succession plan's effectiveness is ensured through regular evaluation and monitoring, which involves analyzing target achievement, gathering feedback from the first supervisor, assessing team satisfaction levels, and evaluating candidate performance during the development process.

3.2. Discussion

Succession planning within university IT departments presents a complex and evolving challenge, shaped by the dual pressures of rapidly changing technology and highly specialized role requirements. These departments are expected to not only manage core infrastructure but also lead digital transformation initiatives, making their leadership continuity a strategic priority. However, the current reliance on subjective assessments—often based on informal evaluations by supervisors or peers—limits the objectivity, accuracy, and fairness of candidate identification processes. As highlighted by recent observations and literature, this conventional approach can hinder the identification of truly qualified successors, delay transitions, and risk operational disruptions when key personnel exit.

To address this issue, the integration of advanced technologies—specifically, a Retrieval-Augmented Generation (RAG) system powered by Large Language Models (LLMs)—offers a significant breakthrough. The proposed system design supports a more objective, data-driven succession planning process by consolidating employee performance metrics, technical competencies, and development progress into a centralized, accessible platform. Through intelligent analysis and contextual understanding, the LLM is capable of not only retrieving relevant data from multiple knowledge sources but also synthesizing this information to generate recommendations for potential successors based on measurable indicators, not subjective opinions.

This shift towards automation and intelligent analysis significantly enhances succession readiness in several key areas. First, the system introduces automated

candidate profiling, where profiles are generated based on experience, technical skills, work outcomes, and even soft skills—captured through supervisor evaluations and peer feedback. This helps overcome one of the major barriers in traditional systems: inconsistency in assessing intangible attributes like adaptability and leadership potential. Second, the system offers real-time candidate recommendations, enabling supervisors to query the LLM directly (as illustrated in Figures 9 and 10) to identify the most suitable employees for specific roles based on dynamic, up-to-date information. This not only speeds up the succession process but ensures better alignment between role requirements and candidate capabilities.

Furthermore, the integration of RAG-based LLMs mitigates the challenges associated with limited or inconsistent data. Through vector embeddings and semantic retrieval, the system can find contextual relevance even in sparse datasets, enhancing recommendation reliability. As discussed in the literature [29], LLMs provide step-by-step reasoning capabilities and explainable outputs, which help supervisors and HR teams understand why certain candidates are recommended—fostering transparency and trust in the system's outputs. The system's ability to function well with limited behavioral data is particularly valuable in academic IT settings, where some roles may not have high visibility but still carry critical importance.

However, the implementation of such intelligent systems is not without challenges. Data quality is a foundational requirement—LLMs rely on structured, accurate, and comprehensive data to produce meaningful outputs. Inconsistent performance reviews, lack of training records, or outdated skills databases can skew recommendations. Additionally, information security must be prioritized, especially in systems handling sensitive HR data. The role-based access control mechanism, as shown in the database and use case design (Figures 7 and 11), ensures data privacy and access restriction according to user roles, reducing risks of unauthorized data exposure.

Another critical challenge lies in user adoption. Supervisors and staff must be willing to engage with the system and provide timely, accurate inputs. Incentivizing participation through feedback loops, performance integration, and training can facilitate smoother onboarding and ongoing usage. The use of intuitive LLM interfaces where users can ask questions in natural language lowers the entry barrier for non-technical users and enhances overall usability.

Beyond candidate identification, the system supports broader organizational goals. It allows for personalized development planning, identifying skill gaps and recommending targeted training programs, project assignments, or mentorship opportunities tailored to each candidate's growth trajectory. This dual focus on

readiness and development aligns well with modern human capital strategies, ensuring that future leaders are not only identified but also equipped for the challenges ahead.

In strategic terms, this intelligent succession planning model has broader implications. As demonstrated in the conceptual succession planning framework (Figure 12), the combination of systematic position identification, objective assessment, structured development, and evaluation ensures leadership continuity without disrupting institutional operations. Importantly, it creates a scalable model that other academic units or administrative departments can replicate, enabling a unified approach to talent management across the university.

In conclusion, the integration of LLM-driven RAG systems into succession planning elevates the process from a reactive, subjective activity to a proactive, evidence-based strategy. By leveraging intelligent automation, the university IT department can identify future leaders more accurately, reduce the risk of leadership gaps, and ensure business continuity. With the right safeguards, data integrity practices, and user engagement strategies, this approach offers a sustainable, forward-looking solution to one of the most pressing human resource challenges in the digital age.

4. CONCLUSION

Based on literature review and observation, succession planning is a strategic approach to ensure continuity and smooth leadership transition, especially in key positions that are prone to vacancies. However, the current practice still relies on subjective judgement which may hinder the selection of the right candidate. Existing applications help in performance assessment, but do not yet fully support proactive succession planning. By integrating Large Language Models (LLM) such as ChatGPT, a more structured succession planning system can help organizations identify key positions, assess candidate competencies in a more objective and in-depth way, and create development plans tailored to individual needs. To better understand the long-term impact of implementing these systems, further research is needed to explore their effect on operational stability and employee retention. This research could examine whether a more structured system can reduce employee turnover rates, increase job satisfaction, and support career development. In addition, research should also assess the impact on operational efficiency and how employees selected through succession planning can contribute to the long-term success of the organization.

REFERENCES

[1] N. Akademik, *Akreditasi Perguruan Tinggi*, 2019.

[2] D. Taye and B. Getnet, "The impact of employee turnover on organizational performance: A case study of Mada Walabu University, Bale Robe, Ethiopia," *Int. J. Manag. Technol.*, vol. 2, no. 3, pp. 51–63, 2020.
[3] K. E. Hoque and C. Zheng, "Succession planning in higher education: A systematic literature review," *Int. J. High. Educ.*, vol. 6, no. 1, pp. 1–16, 2024.
[4] A. K. Ishak, B. Akmal, and M. Kamil, "Succession planning at higher education institutions: Leadership style, career development and knowledge management practices as its predictors," *Int. J. Acad. Res. Bus. Soc. Sci.*, Aug. 2016, 2022.
[5] A. Zafar, G. Khawaja, and H. Akhtar, "Effect of succession planning on organizational growth," *Int. J. Bus. Strategy*, vol. 59, no. 1, pp. 21–33, 2020.
[6] K. E. N. Peffers, T. Tuunanen, and M. A. Rothenberger, "A design science research methodology for information systems research," *MIS Q.*, vol. 24, no. 3, pp. 45–77, 2008, doi: 10.2753/MIS0742-1222240302.
[7] The influence of executive succession planning on sustainability of small and medium enterprises (SMEs) in Lagos, Nigeria," *Texila Int. J. Manag.*, vol. 22, no. 10, pp. 298–309, 2020.
[8] W. J. Rothwell, "Putting success into your succession planning," *IEEE Eng. Manag. Rev.*, vol. 31, no. 2, pp. 11–15, 2003.
[9] B. Sverdlik, "Who will be our nursing leaders in the future? The role of succession planning," *Nurs. Adm. Q.*, vol. 42, no. 7, pp. 383–385, 2020, doi: 10.1097/NNA.0b013e318261938b.
[10] Z. Ali, B. Mahmood, and A. Mehreen, "Linking succession planning to employee performance: The mediating roles of career development and performance appraisal," *Aust. J. Career Dev.*, vol. 28, no. 2, pp. 112–121, 2019, doi: 10.1177/1038416219830419.
[11] M. Ritchie, "Succession planning for successful leadership: Why we need to talk about succession planning," *Manag. Educ.*, vol. 34, no. 1, pp. 33–37, 2020, doi: 10.1177/0892020619881044.
[12] M. Al Suwaidi, F. Jabeen, A. Stachowicz-Stanusch, and M. Webb, "Determinants linked to executive succession planning in public sector organizations," *Vision*, vol. 24, no. 3, pp. 284–299, 2020, doi: 10.1177/0972262920932405.
[13] D. Berke, *Succession Planning and Management: A Guide to Organizational Systems and Practices*. Greensboro, NC: Center for Creative Leadership, 2005.
[14] D. Law, "Talent management of library and information science professionals: A review of research and future directions," *Int. Libr. Rev.*, pp. 1–12, 2024.
[15] T. Razak *et al.*, "The mediating role of talent management in succession planning and private organization sustainability: A conceptual article," *J. Bus. Adm.*, no. 2, pp. 22–33, 2024.
[16] Q. Study, "Talent management in managerial succession planning: A qualitative study," *Int. J. Bus. Manage.*, vol. 15, no. 1, pp. 114–124, 2024.

[17] S. Tafakorian, "The effect of talent management on the succession and profession skills of employees," *Int. J. Humanit. Soc. Sci.*, no. 15, pp. 731–751, 2018.
[18] J. A. Seniwoliba, "Succession planning: Preparing the next generation workforce for the University for Development Studies," *Udsspace,* 2015.
[19] A. R. Ahmad and T. Z. Ming, "Effective strategy for succession planning in higher education institutions," *Asian J. Educ. Soc. Stud.*, vol. 7, no. 2, pp. 203–208, 2020, doi: 10.20448/journal.509.2020.72.203.208.
[20] S. Jayaraman, P. Talib, and A. F. Khan, "Integrated talent management scale: Construction and initial validation," *Sage Open*, vol. 8, no. 3, p. 2158244018780965, 2018.
[21] B. Continuity, "Ensuring business continuity through succession planning: A case study of Zimbabwean businesses," *Int. J. Bus. Manag. Innov.*, vol. 9, no. 7, pp. 1273–1277, 2024.
[22] A. K. Al Hajri, "Succession planning and leadership development in nursing: A bibliometric analysis (2000–2023)," *Nurs. Res. Pract.*, vol. 2024, no. 1, p. 6191008, 2024, doi: 10.1155/2024/6191008.
[23] C. Road, C. Victor, M. Street, and S. Dionisio, "Building leaders for tomorrow: A comprehensive succession planning model for higher education institutions," *J. Educ. Leadersh.*, vol. 5, no. 4, pp. 52–59, 2023.
[24] P. I. Gabriel, C. S. Biriowu, and E. L. Dagogo, "Examining succession and replacement planning in work organizations," *Int. J. Econ. Dev.*, vol. 5, no. 2, pp. 1–7, 2020.
[25] J. Nkeobuna and N. Ugoani, "Management succession planning and its effect on organizational sustainability," *Int. J. Econ. Bus. Adm.*, vol. 6, no. 2, pp. 30–41, 2020.
[26] S. H. Hosseini, A. S. Barzoki, and A. N. Isfahani, "Designing a model of succession management system and explaining its impact on organisational performance: Case study of Esfahan Steel Company," *Int. J. Bus. Excell.*, Jan. 2018, doi: 10.1504/IJBEX.2018.092573.
[27] A. A. Khan, M. T. Hasan, K. K. Kemell, J. Rasku, and P. Abrahamsson, "Developing retrieval augmented generation (RAG) based LLM systems from PDFs: An experience report," *arXiv preprint*, arXiv:2410.15944, pp-1-36, 2024.
[28] S. Baset, S. Suneja, N. Bila, O. Tuncer, and C. Isci, "Usable declarative configuration specification and validation for applications, systems, and cloud," in *Proc. 18th ACM/IFIP/USENIX Middleware Conf.: Industrial Track*, Dec. 2017, pp. 29–35.
[29] J. Kim, H. Kim, and D. Lee, "Review-driven personalized preference reasoning with large language models for recommendation," *Assoc. Comput. Mach.*, vol. 1, no. 1, 2024.

[30] S. Qiao and C. Gao, "LLM-assisted explicit and implicit multi-interest learning framework for sequential recommendation," *Assoc. Comput. Mach.*, vol. 1, no. 1, 2019.
[31] Y. Bano, S. S. Omar, and F. Ismail, "The theoretical foundation for the development of a conceptual model on the relationship between succession planning practices, employee retention and knowledge management in HEIs," *Mediterr. J. Soc. Sci.*, vol. 15, 2024.
[32] R. Barnett and S. Davis, "Creating greater success in succession planning," *Adv. Dev. Hum. Resour.*, vol. 10, no. 5, pp. 721–739, 2015, doi: 10.1177/1523422308322277.