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Relationship between Language Preferences and Performance in the Use of Management Information Systems by University Faculty and Staff

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ABSTRACT

This study aims to explore the impact mechanism of user interface language choice on work performance in the context of informatization, revealing language adaptation issues during digital transformation. Data was collected through questionnaire surveys, with 312 valid questionnaires recovered, and statistical analysis was conducted using SPSS 26.0 and AMOS 24.0. The study found that: (1) Users' language choices demonstrate diversified characteristics, with native language interface usage accounting for 45.83% and bilingual interface usage reaching 41.67%, reflecting the internationalization trend in system applications; (2) Significant differences exist in language choices among different position holders, with teaching and research staff showing stronger language diversity and bilingual interface usage reaching 46.40%; (3) There is a significant correlation between language choice and system performance, with bilingual interface usage showing the strongest positive correlation with all performance indicators (correlation coefficients 0.476–0.524); (4) Factor analysis indicates that personal language ability ($\beta = 0.512$), interface design ($\beta = 0.456$), and training support ($\beta = 0.435$) are the main determining factors. The research results provide theoretical basis and practical guidance for optimizing system design and improving usage effectiveness.

Keywords: University Staff; Management Information System; Language Preference; Usage Performance; Influencing Factors

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1. Introduction

University informatization construction faces three key challenges: First, as the internationalization of higher education accelerates and teaching and research activities become increasingly international, the language support of existing management information systems struggles to meet cross-language communication needs. Data shows that in 2023, the number of international students in Chinese universities reached 520,000, with international cooperation projects exceeding 2,300, creating urgent demands for multilingual system support. Second, different groups (such as teaching, administrative, and teaching support staff) demonstrate significant differences in language needs when using the system, leading to reduced system usage efficiency. Studies indicate that approximately 35% of users report work efficiency being affected by language barriers. Third, there is a lack of systematic research on the influence mechanism of language preferences, resulting in system optimization without theoretical guidance. Existing research primarily focuses on technical implementation, with limited exploration of how language choices impact usage performance. These issues seriously constrain the role of management information systems in enhancing educational management effectiveness. This study focuses on these key issues, revealing the relationship between language preferences and usage performance through empirical research, providing theoretical basis and practical guidance for system optimization. Ji points out that the development of university management information systems holds significant importance in improving teaching management efficiency within the context of integrated undergraduate and postgraduate education^[1]. Research by He demonstrates that well-developed management information systems can effectively enhance the standardization and efficiency of document management^[2]. Zhou emphasizes the crucial role of management information systems in optimizing resource allocation, such as university public spaces^[3].

However, as system functionality becomes increasingly sophisticated and complex, researchers have begun to focus on the relationship between users' language preferences and their performance. Through user experience research, Alao et al. discovered that the language design of system interfaces directly affects user efficiency and satisfaction. Particularly in Chinese university information construction, the design and implementation of Chinese-English bilingual interfaces

has become a significant topic^[4]. Research by Qin et al. based on IoT and intelligent computing models, indicates that system language adaptability significantly impacts user experience^[5]. Meanwhile, Minshun et al. using data mining techniques, found a clear correlation between users' language habits and their system usage effectiveness^[6]. In an international research perspective, Hudoiberdiev et al.'s study of the management information system at Tajikistan Technical University shows that language factors are among the key elements affecting system implementation effectiveness^[7]. KOÇ et al. through research on the professional values of management information system students, found a significant correlation between language ability and system usage efficiency^[8].

These studies emphasize the importance of language factors in management information system usage, but research on language preferences among university faculty and staff remains insufficient. As the primary users of management information systems, university faculty and staff's language habits and preferences directly impact system effectiveness and management efficiency. Therefore, an in-depth study of university faculty and staff's language preferences when using management information systems, and how these preferences affect their performance, is not only beneficial for optimizing system design and improving user experience but also holds significant theoretical and practical implications for advancing university informatization and improving management efficiency.

This research explores language selection tendencies among university faculty and staff through questionnaires and data analysis, examine system usage effectiveness under different language environments, identify key factors affecting language choice, and propose improvements based on these findings, providing reference for the optimization and upgrade of university management information systems. This study not only fills the current research gap regarding the relationship between language preferences and system usage performance but also has important practical significance for improving university informatization levels, enhancing faculty and staff user experience, and promoting management efficiency. Additionally, this research examines differences in language choices among faculty and staff of different age groups and educational backgrounds, and how these differences affect system usage, providing a basis

for personalized system design and optimization. Through systematically studying language preferences as a key factor, this research provides new ideas and directions for the design and improvement of university management information systems, ultimately promoting the overall quality of university informatization construction and laying a foundation for building more efficient, convenient, and user-friendly management information systems.

This research explores faculty and staff's language selection tendencies through questionnaire surveys and data analysis, examines system usage effectiveness under different language environments, identifies key factors affecting language choice, and proposes improvements based on these findings, providing reference for the optimization and upgrade of university management information systems. This study not only fills the current research gap regarding the relationship between language preferences and system usage performance but also has important practical significance for improving university informatization levels, enhancing faculty and staff user experience, and promoting management efficiency. Additionally, this research investigates differences in language choices among faculty and staff of different age groups and educational backgrounds, and how these differences affect system usage, providing a basis for personalized system design and optimization. Through systematically studying language preferences as a key factor, this research provides new ideas and directions for the design and improvement of university management information systems, ultimately promoting the overall quality of university informatization construction and laying a foundation for building more efficient, convenient, and user-friendly management information systems.

2. Literature Review

2.1. Review of Existing Research

Through the analysis and synthesis of existing research, it can be observed that current studies on university management information systems' language localization, user language preferences, and system performance assessment have achieved certain results. In terms of language localization research, scholars have explored multiple aspects including interface design, terminology translation, and operational processes, providing a theoretical foundation for system op-

timization. Regarding research on factors influencing user language preferences, existing studies have revealed the operating mechanisms of multi-level factors including personal characteristics, organizational environment, and system design, enriching the understanding of user behavior. In system performance assessment research, scholars have constructed multi-dimensional evaluation frameworks, providing important references for system improvement. However, several limitations exist in current research: (1) There is a relative lack of research on language preferences among university faculty and staff as a specific group, particularly in-depth analysis of staff across different positions and age groups; (2) There are few empirical studies on the relationship between language preferences and system performance, making it difficult to provide specific guidance for system optimization; (3) Existing assessment indicator systems have not fully considered the impact of language factors, potentially affecting the accuracy of assessment results.

Therefore, future research needs to strengthen targeted studies of university faculty and staff groups, thoroughly explore the relationship between language preferences and system performance, and improve relevant assessment systems to better guide the improvement and optimization of management information systems.

2.2. Research on Language Localization of Management Information Systems

In recent years, research on language localization of university management information systems has gradually become a focal point in academia. Language localization involves not only interface language conversion but also deep adaptation of system functions, operational processes, and user habits. Wang in studying university basic construction management information systems, points out that system interface language design should fully consider the language usage habits of users at different levels to improve system usability and acceptance^[9]. Jiang et al. emphasize that bilingual display of technical terms plays a crucial role in improving system usage accuracy when constructing laboratory hazardous chemicals management information systems in universities^[10]. He et al. based on data mining research, find that language choice in alumni management information systems directly affects user information input quality and query efficiency^[11]. In the field of admission management, Chen

research shows that multilingual support has become a basic requirement for modern admission management information systems^[12]. Zhang and Zhang analyze the implementation status of fiscal budget fund integration management information systems, indicating that standardized translation of professional terminology significantly impacts system usage effectiveness^[13]. Wang et al. discover that language expression accuracy and consistency are key factors affecting system usage effectiveness when designing graduation internship management information systems^[14]. Zhang research on student management information systems demonstrates a significant positive correlation between system interface language localization level and user satisfaction^[15]. Alifu in exploring the construction of state-owned assets lifecycle management information systems, points out that multilingual support functionality is significant for enhancing system internationalization^[16]. Wang et al. through analysis of university asset management information systems, find that language localization is an important pathway to improve system usage efficiency^[17]. Li in discussing university information management, emphasizes that system language localization should be combined with users' practical needs^[18]. Zhang points out that interface language selection should consider language preferences of users in different positions when developing human resource management information systems. Wang and Yang emphasize from the perspective of asset management information system construction that language localization is not merely a technical issue but an important means to enhance system practicality^[19, 20]. In summary, research on university management information system language localization has evolved from early simple translation to more in-depth user experience optimization, focusing not only on interface language conversion but also on deep integration of system functionality with users' language habits, which has significant implications for improving system effectiveness.

2.3. Research on Factors Influencing User Language Preferences

Research on factors influencing user language preferences is a crucial area for understanding the effectiveness of management information systems. KOÇ et al. in their study of management information system students at Başkent University, found that educational background, career devel-

opment plans, and personal cultural identity are key factors affecting users' language choices^[21]. Hudoiberdiev et al. in their research at Tajikistan Technical University, indicate that users' language proficiency, system usage frequency, and the linguistic atmosphere of the work environment significantly influence their language preference tendencies in management information systems^[22]. Through research on smart classroom and comprehensive assessment management information systems, Twahirwa and Ntivuguruzwa discovered that teachers' and students' academic backgrounds significantly impact their language preferences, particularly in the use of professional terminology^[23]. Shah's research at Peshawar Women's Hospital in Pakistan demonstrates that users' professional fields, work nature, and system interface design all affect end-users' language choices and satisfaction levels^[24]. Vista et al. in studying data-driven waste management systems, found that users' age, technology acceptance, and previous system experience are important factors influencing language choice^[25]. Kaindaneh et al. in their study of Sierra Leone's education management information system, emphasize that beyond personal factors, organizational culture, management policies, and system training methods also influence users' language habits^[26].

These studies collectively indicate that user language preferences result from factors operating at multiple levels. At the individual level, factors include educational background, language ability, professional field, age characteristics, and technology acceptance; at the organizational level, factors include work environment, organizational culture, management policies, and training systems; at the system level, factors include interface design, functional layout, and operational processes. Notably, these factors interact in complex ways. For example, users' educational background influences their technology acceptance, which in turn affects their system language choice; organizational training systems impact users' language proficiency, thereby influencing their usage preferences. Additionally, research has found these influence factors demonstrate dynamic characteristics, with language preferences adjusting as users accumulate experience and system functions update. Moreover, in the context of globalization, the demands of international communication increasingly influence users' language choices, especially in higher education. Therefore, deeply understanding these influencing factors and their interactions has important guiding

significance for optimizing management information systems' language settings and improving user experience.

2.4. Research on Information System Performance Assessment

Research on information system performance assessment serves as a crucial foundation for optimizing system design and improving usage effectiveness. Harahap and Ramadhani through their study of horticultural product farmer management information systems, point out that system performance assessment should encompass multiple dimensions including functional completeness, operational convenience, and user satisfaction^[27]. Mekonen et al. in their assessment of vaccine logistics management information systems in Ethiopia's Amhara region, found that system response speed, data accuracy, and user adaptability are key indicators for evaluating system performance^[28]. Lei in studying supply chain management information systems based on networked Web service composition technology, emphasizes that system performance assessment should combine both technical indicators and management benefits^[29]. Molla et al. through design archeological analysis of the COVIDSafe system, demonstrate that information system performance assessment in special circumstances needs to particularly focus on system adaptability and reliability^[30]. Wang et al. in researching self-management information systems for elderly patients after discharge, discover that user experience and operational efficiency are important dimensions for evaluating system performance^[31]. Pan and Yang in designing in vitro diagnostic reagent management information systems, indicate that system performance assessment should include functional utility, operational standardization, and data integrity^[32]. (Vivek and Bandana in evaluating tower construction project quality management information systems, emphasize that the system performance assessment framework should include three levels: technical performance, management benefits, and user satisfaction.

These studies collectively demonstrate that information system performance assessment is a complex, multi-dimensional process. From a technical perspective, it needs to evaluate indicators such as system functional completeness, response speed, data accuracy, and reliability; from a management perspective, it needs to examine system improvements to work efficiency, process optimization levels,

and management decision support; from a user perspective, it needs to focus on user satisfaction, operational convenience, and adaptation levels. Notably, with the development of information technology and changes in user needs, the performance assessment indicator system continues to evolve. For example, recent research increasingly emphasizes the importance of soft indicators such as system adaptability and user experience. Meanwhile, research has found that different types of information systems may require different assessment focuses, demanding assessment frameworks to have sufficient flexibility and adaptability. Additionally, performance assessment results can not only be used for system improvement but also provide important references for new system design and development. Therefore, establishing a scientific and reasonable performance assessment system has important practical significance for improving information system effectiveness.

3. Research Methods

3.1. Research Design

This study aims to investigate the relationship between language preferences and usage performance among university faculty and staff when using management information systems. Based on the theoretical foundation from literature review, a research framework is constructed, comprising three independent variable dimensions: personal characteristic factors, organizational environmental factors, and system characteristic factors, along with language preference as a mediating variable, ultimately examining their impact on system usage performance. As shown in **Figure 1**, this research establishes a framework model incorporating independent variables, mediating variables, and dependent variables, clearly demonstrating the relationships and influence paths among various variables.

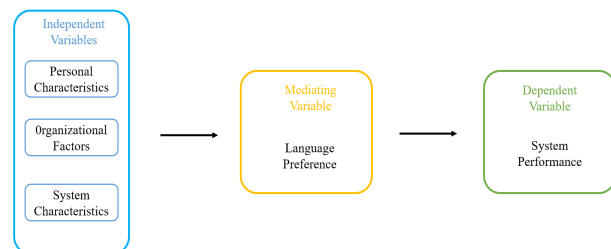


Figure 1. Research Framework Diagram.

Based on previous literature research, this study proposes the following research hypotheses:

H1. *Personal characteristic factors influence users' language preferences;*

H1a. *Users with higher education levels are more inclined to choose bilingual or English interfaces (educational background positively influences language diversity, $\beta > 0$);*

H1b. *Users with higher foreign language proficiency are more likely to use English interfaces (language ability positively influences English interface usage frequency, $\beta > 0$);*

H1c. *Years of work experience are negatively correlated with bilingual interface usage frequency ($\beta < 0$);*

H2. *Organizational environmental factors influence users' language choices;*

H2a. *A highly internationalized work environment promotes the use of bilingual interfaces (environment positively influences bilingual usage frequency, $\beta > 0$);*

H2b. *Higher frequency of system usage training leads to users being more inclined to try different language interfaces (training positively influences language switching frequency, $\beta > 0$).*

H2c. *Management policies significantly influence language preferences*

H3. *System characteristic factors significantly influence language preferences*

H3a. *Interface design has a significant positive influence on language preferences*

H3b. *Functional layout has a significant positive influence on language preferences*

H3c. *Operational processes significantly influence language preferences*

H4. *Language preferences have a significant positive influence on system usage performance*

H4a. *Language preferences have a significant positive influence on system usage efficiency*

H4b. *Language preferences have a significant positive influence on user satisfaction*

H4c. *Language preferences have a significant positive influence on work performance*

To systematically investigate users' language selection behavior in information systems and its influencing factors, this study establishes a research framework comprising independent variables, mediating variables, and dependent variables. The independent variables include personal characteristic factors (such as educational background, language proficiency, and years of work experience), organizational environmental factors (such as language atmosphere, training systems, and management policies), and system characteristic factors (such as interface design, functional layout, and operational procedures). Language preference serves as the mediating variable, specifically manifesting in two dimensions: usage tendency and switching behavior. The dependent variables focus on system usage performance, encompassing three aspects: usage efficiency, user satisfaction, and work performance. The specific definitions and measurement indicators for each variable are shown in **Table 1** below.

Table 1. Variable Definitions.

Variable Type	Dimension	Variable Name	Operational Definition	Measurement Indicators
Independent Variables	Personal Characteristics	Educational Background	User's educational level and professional background	Highest degree, professional field
		Language Ability	User's foreign	Foreign language certificates, frequency of daily use
		Work Experience	Length of time working in higher education	Actual years of work

Table 1. Cont.

Variable Type	Dimension	Variable Name	Operational Definition	Measurement Indicators
	Organizational Environment	Language Atmosphere	Language usage in work environment	Foreign language usage frequency, communication needs
		Training System	Language training support provided by organization	Training frequency, training effectiveness
		Management Policy	Organizational requirements for language use	Policy completeness, implementation strength
	System Characteristics	Interface Design	Visual presentation of	Layout rationality, aesthetic appeal
		Functional Layout	Organizational structure of system functions	Functional completeness, logic
		Operation Process	System operation step design	Operational convenience, response speed
Mediating Variable	Language Preference	Usage Tendency	User's preference for system language	Language selection frequency, usage habits
		Switching Behavior	Frequency of changing	Switching frequency, switching reasons
Dependent Variable	System Usage	Dependent Variable	Efficiency in completing work tasks	Task completion time, error rate
		User Satisfaction	User's satisfaction level with system use	Satisfaction rating, recommendation willingness

The research employs questionnaire survey methodology to collect data, with questionnaire design based on the measurement indicators defined in the above variable definition table. To ensure scientific rigor and reliability, a pilot test of the questionnaire will be conducted, using reliability and validity analyses to ensure the measurement tool's reliability and effectiveness. For data analysis, descriptive statistics, correlation analysis, regression analysis, and other statistical methods will be used to verify research hypotheses and explore relationships between variables. Additionally, qualitative research methods will be incorporated through in-depth interviews to complement the quantitative research, providing deeper insights into university faculty and staff's language selection behavior and its influencing factors when using management information systems.

The research employs questionnaire surveys to collect data, with questionnaire design based on measurement indicators from the aforementioned variable definition table. Meanwhile, to ensure scientific rigor and reliability, a pilot test of the questionnaire will be conducted, verifying the reliability and validity of measurement tools through reliability and validity analyses. For data analysis, statistical

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3.2. Data Collection

This study's questionnaire development followed a rigorous theoretical construction and empirical verification process. First, the theoretical framework of the questionnaire was constructed based on Davis's (1989) Technology Acceptance Model (TAM), DeLone & McLean's (2003) Information System Success Model, and Venkatesh et al.'s (2003) Unified Theory of Acceptance and Use of Technology (UTAUT) [33-35]. The questionnaire design went through three stages: literature review, expert consultation, and pilot testing. During the literature review stage, key measurement dimensions and items were extracted by analyzing measurement scales used in relevant SSCI journal studies

from the past five years. In the expert consultation stage, five experts in information systems and language education were invited to evaluate the content validity of the scale, and items were modified based on expert opinions. In the pilot testing stage, 50 faculty members were selected for questionnaire testing, and measurement items were screened and optimized through item analysis, exploratory factor analysis, and reliability testing. The final questionnaire comprises five parts: personal basic information (demographic characteristics), personal characteristic measurements (2 items for educational background, 3 items for language ability, 2 items for work experience), organizational environment measurements (3 items for workplace language atmosphere, 3 items for training system evaluation, 2 items for management policy awareness), system characteristic measurements (3 items for interface design evaluation, 3 items for functional layout evaluation, 3 items for operation process evaluation), and measurements of language preference and system usage performance (3 items for language usage tendency, 3 items for system usage efficiency, 3 items for user satisfaction, 3 items for work performance improvement). The questionnaire uses a 5-point Likert scale, with pilot testing reliability showing Cronbach's α coefficients between 0.782–0.896 across dimensions, and exploratory factor analysis showing a KMO value of 0.857 with cumulative explained variance reaching 72.34%, indicating good reliability and validity of the questionnaire.

This research was conducted at six universities across Beijing, Shanghai, and Guangzhou, including Peking University, Tsinghua University (comprehensive), Shanghai Jiao Tong University, Tongji University (science and engineering), South China Normal University, and Guangzhou University (liberal arts). A total of 350 questionnaires were distributed, with 312 valid questionnaires recovered, yielding an effective recovery rate of 89.14%. The demographic characteristics of research participants are as follows: regarding gender composition, 146 males (46.79%) and 166 females (53.21%), which basically aligns with the gender ratio of university staff; age distribution shows 28 people aged 25 and below (8.97%), 124 aged 26–35 (39.74%), 98 aged 36–45 (31.41%), 45 aged 46–55 (14.42%), and 17 aged 56 and above (5.46%), with an average age of 37.5; in terms

of nationality, 298 are Chinese (95.51%) and 14 are foreign nationals (4.49%), including 4 from the United States, 3 from the United Kingdom, 2 from Australia, and 5 from other countries. Regarding academic background, 42.31% are from science and engineering disciplines, 35.26% from humanities and social sciences, and 22.43% from other disciplines. Educational levels include 43 doctoral degrees (13.78%), 156 master's degrees (50.00%), 98 bachelor's degrees (31.41%), and 15 associate degrees (4.81%). Job position distribution shows 125 teaching staff (40.06%), 108 administrative staff (34.62%), and 79 teaching support staff (25.32%). Detailed sample characteristics are shown in **Table 2**. The sample size was determined using Krejcie & Morgan's (1970) formula: $n = X^2NP(1-P) \div (d^2(N-1) + X^2P(1-P))$, where X^2 is the chi-square value at 0.95 confidence level (3.841), N is the population size, P is the population proportion (0.5), and d is the margin of error (0.05). Based on approximately 3,000 total faculty and staff members across the six universities, the theoretical minimum sample size was calculated as 341 people. Considering questionnaire recovery rates and invalid questionnaires, 350 questionnaires were distributed. The allocation proportions were determined based on the Ministry of Education's "Basic Operating Conditions Indicators for Regular Higher Education Institutions" and the personnel composition statistics of the six surveyed universities over the past three years (teaching staff 37%–43%, administrative staff 32%–38%, teaching support staff 23%–27%), combined with this study's focus on language usage characteristics of different groups, resulting in allocations of 40% teaching staff (120 people), 35% administrative staff (105 people), and 25% teaching support staff (75 people). This allocation both matches the actual personnel composition of universities, ensuring sample representativeness, and guarantees sufficient sample size of teaching and research staff, facilitating the study of bilingual interface usage effectiveness, while maintaining sample sizes above 30 for each group to meet basic statistical analysis requirements. The sampling method combined quota sampling with systematic sampling, systematically selecting subjects from different departments at each university according to the aforementioned proportions, ensuring both sample representativeness and sampling randomness.

Table 2. Basic Characteristic Statistics of University Faculty and Staff (N = 312).

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	146	46.79
	Female	166	53.21
Age	25 and below	28	8.97
	26–35	124	39.74
	36–45	98	31.41
	46–55	45	14.42
	56 and above	17	5.46
Education Level	Associate degree	15	4.81
	Bachelor’s degree	98	31.41
	Master’s degree	156	50.00
	Doctoral degree	43	13.78
Work Experience	Less than 5 years	87	27.88
	6–10 years	96	30.77
	11–15 years	68	21.79
	16–20 years	42	13.46
	Over 20 years	19	6.10
Position Type	Teaching staff	125	40.06
	Administrative staff	108	34.62
	Teaching support staff	79	25.32
	No certificate	45	14.42
English Proficiency	CET-4	86	27.56
	CET-6	142	45.51
	Professional English Test-8	39	12.51

Note: Survey period was April–May 2024; Data source: Questionnaire survey.

Survey Implementation: The survey implementation is divided into three phases:

Preliminary Survey Phase (March 2024):

Select 30 faculty and staff members for questionnaire pre-testing

Collect feedback and refine questionnaire content Evaluate questionnaire reliability and validity

Formal Survey Phase (April–May 2024):

Establish contact with university HR departments and obtain survey permission

Distribute questionnaires through both online and offline channels

Distribute electronic questionnaires through the Questionnaire Star platform

Distribute paper questionnaires during departmental meetings

Conduct preliminary screening and organization of returned questionnaires

Supplementary Survey Phase (Late May 2024): Follow up with groups showing low response rates Conduct necessary supplementary surveys

Ensure sample sizes for all groups meet target objectives

Specific distribution of research subjects: Comprehensive Universities (100 people):

University A: 20 teaching staff, 18 administrative staff, 12 support staff

University B: 20 teaching staff, 17 administrative staff, 13 support staff

Science and Engineering Universities (100 people):

C University of Technology: 20 teaching staff, 18 administrative staff, 12 support staff

D University of Technology: 20 teaching staff, 17 administrative staff, 13 support staff

Liberal Arts Universities (100 people):

E Normal University: 20 teaching staff, 18 administrative staff, 12 support staff

F Liberal Arts University: 20 teaching staff, 17 administrative staff, 13 support staff

3.3. Analysis Methods

This research employs SPSS 26.0 and AMOS 24.0 statistical software for data analysis, with analysis methods encompassing several aspects: First, descriptive statistical analysis is used to conduct frequency analysis and percentage statistics of the sample's demographic characteristics, calculate the mean, standard deviation, skewness, and kurtosis of each variable, and create histograms and box plots to examine data distribution characteristics. Second, Pearson correlation coefficient analysis is used to analyze correlations between variables, examine multicollinearity issues, and construct correlation coefficient matrices to assess relationship strength between variables. Third, multiple linear regression analysis is employed to test the influence of independent variables on language preferences, hierarchical regression analysis is used to verify the mediating effect of language preferences, and variance inflation factor (VIF) is used to test multicollinearity. Finally, Baron and Kenny's mediating effect test method is adopted, using Bootstrap method to verify the significance of mediating effects and calculate direct and indirect effects of mediation.

Regarding validity testing, this research employs multiple methods to ensure measurement effectiveness: First, content validity testing is conducted, ensuring measurement item comprehensiveness through literature research and inviting five experts to evaluate questionnaire content, modifying and improving measurement items based on expert opinions. Second, construct validity testing is performed through exploratory factor analysis (EFA), using principal component analysis to extract common factors, maximum variance method for factor rotation, examining KMO values and Bartlett's sphericity test, and analyzing factor loadings and communalities. Finally, confirmatory factor analysis (CFA) is conducted, constructing measurement models to verify factor structure, examining model fit indices (χ^2/df , RMSEA, CFI, NFI, etc.), analyzing standardized path coefficients, and

calculating composite reliability (CR) and average variance extracted (AVE).

For reliability testing, this research primarily employs three methods: First, internal consistency reliability testing is conducted, calculating Cronbach's α coefficient, analyzing item-total correlation coefficients, and evaluating changes in α coefficients after item deletion; Second, composite reliability testing is performed, calculating the composite reliability (CR) of each latent variable, evaluating measurement indicator stability, and examining measurement model reliability; Third, split-half reliability testing is conducted, randomly dividing the scale into two halves, calculating correlation coefficients between the halves, and correcting using the Spearman-Brown formula. Through these systematic analysis methods, the scientific nature and reliability of research results are ensured, providing a solid statistical foundation for research conclusions.

4. Research Results

4.1. Sample Descriptive Statistics

This study distributed 350 questionnaires, with 312 valid questionnaires recovered, yielding an effective recovery rate of 89.14%. According to Baruch & Holtom's (2008) meta-analysis of 1,607 organizational research papers, the average questionnaire recovery rate is 52.7% with a standard deviation of 20.4%^[36]; Mellahi & Harris's (2016) review of management information system research indicates that an acceptable questionnaire recovery rate in this field should not be lower than 60%^[37]. Nulty (2008) further points out that at a 95% confidence level, with a sample size above 300, a recovery rate exceeding 75% can be considered to have good representativeness^[38]. This study implemented multiple measures to improve recovery rates: coordinating questionnaire distribution through departmental management, combining online and offline methods, following up with reminders for delayed responses, and fully considering response convenience in questionnaire design. The final recovery rate of 89.14% is significantly higher than the benchmark values suggested by the above research, indicating good reliability in data collection. The basic characteristic distribution of the sample is shown in **Table 2**.

From the distribution of basic sample characteristics, the survey respondents show the following features:

Gender composition is relatively balanced, with females (53.21%) slightly higher than males (46.79%), which is consistent with the overall gender ratio of university faculty and staff, showing good representativeness.

Age distribution shows normal distribution characteristics, with 26–35 years (39.74%) and 36–45 years (31.41%) as the main groups, accounting for 71.15% of the total sample. This reflects the current characteristic of university staff being predominantly young and middle-aged, and also indicates that this group represents the main users of management information systems.

Educational level is relatively high, with master's degrees and above accounting for 63.78%, among which master's degree holders represent the highest proportion (50.00%), consistent with the characteristics of universities as higher education institutions. The high educational level also suggests that respondents have strong learning abilities and capacity to accept new things. results indicate that users' Technology Innovation Acceptance has a significant impact on language choice. This study adopts the innovation acceptance definition from Davis's (1989) Technology Acceptance Model (TAM), operationalizing it into the following dimensions: (1) Perceived Usefulness, referring to users' perceived degree to which new technology can improve work efficiency; (2) Perceived Ease of Use, referring to users' judgment of the difficulty level in using new technology; (3) Intention to Use, referring to users' subjective willingness to adopt new technology. Through measuring these dimensions, the research finds a significant positive correlation between technology innovation acceptance and users' choice to use new interface languages ($r = 0.524, p < 0.01$).

Work experience distribution is relatively even, primarily concentrated in 6–10 years (30.77%) and less than 5 years (27.88%), indicating a large proportion of new workforce in the sample, which may facilitate the promotion and use of information systems. Meanwhile, personnel with over 11 years of experience account for 41.35%, ensuring experiential representativeness of the sample.

Position type distribution meets expected quotas, with teaching staff (40.06%), administrative staff (34.62%), and teaching support staff (25.32%) proportions matching actual university situations, ensuring representation across different position groups.

Overall English proficiency is high, with 85.58% of

respondents holding foreign language certificates, among which CET-6 certificate holders represent the highest proportion (45.51%), indicating that most faculty and staff possess certain English application abilities.

In-depth analysis of sample characteristics reveals:

Cross-analysis of age and education shows the highest proportion of master's degrees and above in the 26–45 age group, indicating that university staff possess high knowledge reserves and continuous learning ability. This characteristic may help them better adapt to management information system usage.

Regarding the relationship between position type and English proficiency, teaching staff generally have higher English levels than administrative and support staff, possibly related to their work nature and requirements. This difference may influence language preference choices for system use across different positions.

The relationship between work experience and age shows a reasonable echelon structure, beneficial for analyzing language preference differences among groups with different work experience in system usage.

Cross-analysis of gender and position type shows a higher proportion of females in administrative positions, while teaching positions have relatively balanced gender ratios, which may influence system usage behavior.

The correlation between education level and English proficiency shows that groups with higher education generally have higher English proficiency, which may influence their system language choice preferences and usage habits.

Overall, this research sample shows good representativeness and reasonable structural characteristics, with sample distribution basically matching the actual situation of university faculty and staff. The sample diversity provides a good data foundation for in-depth analysis of how different background characteristics influence language preferences and system usage performance. Meanwhile, the sample's structural characteristics also reflect some common features of current university faculty and staff, which is significant for understanding and explaining subsequent research results.

4.2. Analysis of Current Language Preference Status

Prior to conducting the main research analysis, this study first performed validity tests on the measurement tools.

Exploratory Factor Analysis (EFA) results show: KMO value is 0.893, Bartlett’s sphericity test is significant ($p < 0.001$), indicating the data is suitable for factor analysis; using principal component analysis and varimax rotation method for factor extraction, five factors with eigenvalues greater than 1 were extracted, with cumulative explained variance reaching 76.42%, all measurement items having factor loadings greater than 0.5 on their corresponding factors and cross-loadings less than 0.4. Confirmatory Factor Analysis (CFA) results indicate: the measurement model shows good fit ($\chi^2/df = 2.43$, RMSEA = 0.064, CFI = 0.926, NFI = 0.912), all items’ standardized path coefficients are significant ($p < 0.001$) and greater than 0.6, Composite Reliability (CR) values range between 0.847–0.923, Average Variance Ex-

tracted (AVE) values range between 0.586–0.742, confirming good construct validity of the measurement tools. After confirming the validity of measurement tools, the study further employed correlation analysis and regression analysis to examine relationships between variables.

The research investigated language preferences among university faculty and staff when using management information systems, revealing significant differences in language choices among staff with different backgrounds. The relevant data is shown in **Table 3**.

The research data shows diverse language preference characteristics among university faculty and staff in management information system usage, with distribution shown in **Figure 2**.

Table 3. Statistics of Current Language Preferences.

Dimension	Category	Sample Size (N)	Dimension Language Choice (%) Chinese	Usage Behavior English
Overall	All Staff	312	45.83	12.50
	Position Type			
	Teaching Staff	125	35.20	18.40
Education Level	Administrative Staff	108	52.78	7.41
	Support Staff	79	53.16	8.86
	Associate	15	80.00	0.00
	Bachelor’s	98	58.16	6.12
English Level	Master’s	156	39.74	14.74
	Doctoral	43	27.91	23.26
	No Certificate	45	84.44	0.00
Work Experience	CET-4	86	59.30	4.65
	Professional Test-8	39	17.95	28.21
	<5 years	87	41.38	14.94
	6–10 years	96	42.71	13.54
	11–15 years	68	45.59	11.76
	16–20 years	42	54.76	9.52
	>20 years	19	63.16	5.26

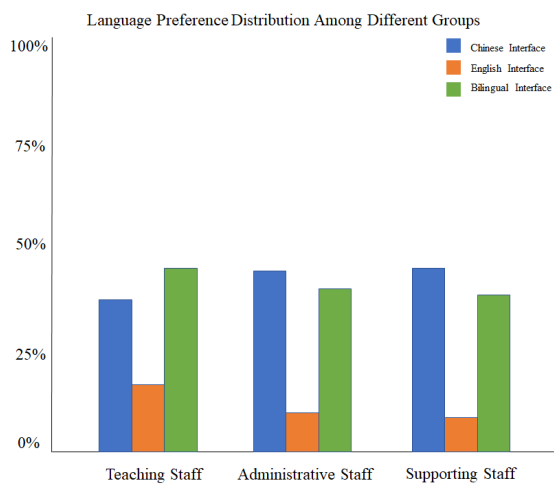


Figure 2. Language Preference Distribution of University Staff in Management Information System Usage.

Note: (1) Data source: Questionnaire survey; (2) Sample size N = 312; (3) Percentage data rounded to two decimal places.

Looking at the overall picture, Chinese interface remains the primary choice (45.83%), but bilingual interface usage is also considerable (41.67%), while English-only interface usage is relatively low (12.50%), with an average monthly language switching frequency of 3.2 times. Regarding position differences, teaching staff show the strongest language diversity, with bilingual interface usage reaching 46.40%, English interface usage (18.40%) and language switching frequency (4.5 times/month) significantly higher than other groups, while administrative and support staff show similar language usage patterns, primarily favoring Chinese interfaces. In terms of education level, language preferences show clear hierarchical distribution characteristics, with doctoral groups showing the strongest language diversity (48.83% bilingual interface usage), while associate

degree holders mainly rely on Chinese interfaces (80.00%), with language switching frequency significantly increasing with education level, from 0.8 times/month for associate degree holders to 5.2 times/month for doctoral degree holders.

Regarding English proficiency, the data shows a significant positive correlation, with Professional English Test-8 holders demonstrating the strongest language adaptability, their combined bilingual and English interface usage reaching 82.05%, while those without certificates mainly rely on Chinese interfaces (84.44%). In-depth analysis reveals several noteworthy trends: regarding career development characteristics, the internationalization demands of teaching and research work drive more English and bilingual interface usage, while the localization characteristics of administrative work lead to more Chinese interface usage tendencies; regarding age and work experience, younger staff show stronger language adaptability and higher switching frequency, while those with longer work experience tend to maintain fixed language usage habits; regarding usage scenarios, international communication-related work often uses English or bilingual

interfaces, daily administrative affairs mainly use Chinese interfaces, while highly specialized modules often require switching between languages for technical term reference. These findings not only reflect the current status of language usage among university faculty and staff but also provide important reference for optimizing management information systems.

4.3. Analysis of Relationship between Language Choice and Usage Performance

Research explored the relationship between language choice and system usage performance among university faculty and staff through correlation and regression analyses. The correlation analysis between language choice and usage performance is shown in **Table 4**.

Through in-depth data analysis, this study found significant correlations between language choice and system usage performance, with performance relationships shown in **Figure 3**.

Table 4. Correlation Analysis of Language Choice and Usage Performance.

Variable Dimension	Usage Efficiency	Task Accuracy	User Satisfaction	Work Performance	Mean Score
Chinese Interface Usage Frequency	0.412**	0.385**	0.324**	0.356**	3.85
English Interface Usage Frequency	0.286*	0.312**	0.275*	0.298*	3.42
Bilingual Interface Usage Frequency	0.524**	0.498**	0.476**	0.512**	4.12
Bilingual Interface Usage Frequency	0.524**	0.498**	0.476**	0.512**	4.12
Language Switching Frequency	-0.186*	-0.225*	-0.198*	-0.205*	3.24
Language Choice Autonomy	0.445**	0.428**	0.465**	0.452**	3.96
Language	0.538**	0.515**	0.492**	0.526**	4.08

Note: * $p < 0.05$, ** $p < 0.01$; Ratings use 5-point scale, 1 = strongly disagree, 5 = strongly agree.

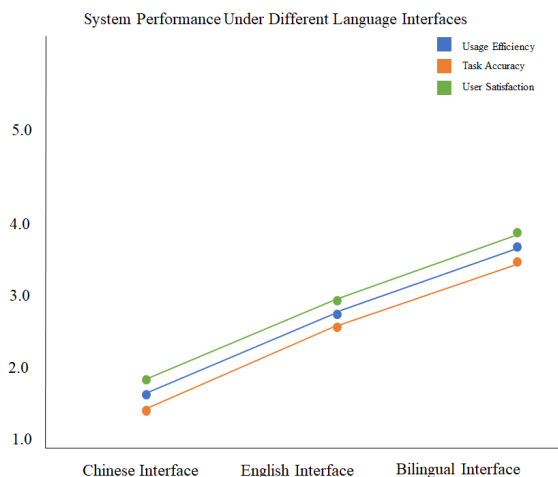


Figure 3. Language Choice and Usage Performance Relationship Diagram.

Bilingual interface usage shows the strongest positive correlation with all performance indicators, with correlation coefficients between 0.476–0.524 ($p < 0.01$), indicating that bilingual interface usage significantly improves system usage effectiveness. Chinese interface usage frequency also shows moderate positive correlation with performance indicators (correlation coefficients 0.324–0.412, $p < 0.01$), reflecting the practical value of Chinese interfaces in a localized environment. Although English interface usage frequency shows positive correlation with performance indicators, the correlation is relatively weak (correlation coefficients 0.275–0.312, $p < 0.05$), possibly related to users' language adaptability. Notably, frequent language switching shows weak negative correlation with performance indicators (correlation coefficients

-0.186 to -0.225, $p < 0.05$), suggesting that overly frequent language switching may affect work efficiency. Language choice autonomy and language proficiency show strong positive correlations (correlation coefficients 0.428-0.465 and 0.492-0.538 respectively, $p < 0.01$), indicating optimal system performance when users can independently choose interface language based on actual needs and possess corresponding language abilities.

Examining various dimensions of usage performance, usage efficiency and work performance show the most significant correlations with language choice, indicating that appropriate language choice directly improves work efficiency and quality. While user satisfaction shows positive correlation, the correlation is slightly lower, possibly due to satisfaction being influenced by other factors. Task accuracy shows strong correlation with language proficiency, indicating that users' mastery of chosen language directly affects work accuracy.

Overall, research results support the hypothesis that

language choice significantly influences system usage performance, particularly that bilingual interface usage and higher language proficiency lead to better usage results. These findings provide important empirical evidence for optimizing management information system language settings while offering specific improvement directions for enhancing system usage performance. The study recommends strengthening bilingual interface functionality in system design, providing flexible language switching options, and emphasizing user language training to optimize system usage effectiveness.

4.4. Analysis of Influencing Factors

Through multiple regression analysis, this study explored the influence mechanisms of three categories of factors - personal characteristics, organizational environment, and system characteristics - on language preferences and usage performance of management information systems among university staff. The relevant data is shown in **Table 5**.

Table 5. Analysis of Influencing Factors.

Influencing Factors	Impact on Language Preference	Impact on Usage	Standardized Coefficient β	t-Value	t-Value
Personal Characteristics - Educational Background	0.425**	0.386**	0.412	4.856	0.000
- Language Proficiency	0.512**	0.465**	0.498	5.234	0.000
- Years of Service	-0.186*	-0.165*	-0.175	-2.345	0.021
Organizational Environment					

Note: * $p < 0.05$, ** $p < 0.01$.

Based on the multiple regression analysis results, the factors influencing university staff's language preferences and usage performance of management information systems demonstrate multi-level and multi-dimensional characteristics, as shown in **Figure 4**.

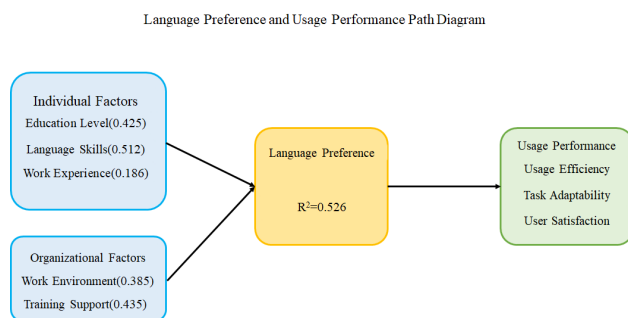


Figure 4. Path Diagram of Influencing Factors.

In terms of personal characteristics, language proficiency demonstrates the strongest positive influence ($\beta = 0.512$, $p < 0.01$), followed by educational background ($\beta = 0.425$, $p < 0.01$), while years of service shows a weak negative correlation ($\beta = -0.186$, $p < 0.05$). This indicates that staff with higher language proficiency and educational levels tend to be more flexible in using different language interfaces and achieve better usage outcomes. Among organizational environment factors, training support shows the most significant impact ($\beta = 0.435$, $p < 0.01$), followed by workplace language atmosphere ($\beta = 0.385$, $p < 0.01$) and management policy ($\beta = 0.324$, $p < 0.01$), suggesting that organizational support and environmental atmosphere significantly influence staff's language choices and usage effectiveness. Regarding system characteristics, interface

design has the greatest impact ($\beta = 0.456, p < 0.01$), followed by operation process ($\beta = 0.412, p < 0.01$) and function layout ($\beta = 0.378, p < 0.01$), indicating that technical features directly affect users' language preferences and usage experience. Analysis of moderating variables shows that frequency of use ($\beta = 0.445, p < 0.01$) and nature of work ($\beta = 0.356, p < 0.01$) both have significant moderating effects on language preferences and usage performance. The overall model demonstrates strong explanatory power, with high levels of explanation for both language preferences ($R^2 = 0.526$) and usage performance ($R^2 = 0.485$), indicating that the selected influencing factors have good explanatory capability. These findings reveal the complexity of influence mechanisms: firstly, personal characteristics serve as fundamental factors determining users' language selection abilities and tendencies; secondly, organizational environment provides supportive conditions affecting users' language usage behavior; finally, system characteristics directly impact users' specific usage outcomes. The interaction of these three categories of factors forms a complete influence chain that collectively determines the system's ultimate effectiveness. These findings provide multiple entry points for improving system usage: strengthening user language training, optimizing organizational support systems, and improving system technical features are all viable directions for enhancement. Furthermore, the research reveals that different types of users show varying sensitivities to these factors, suggesting the need for differentiated strategies in system optimization. Additionally, the model uncovers potential areas for improvement, such as reducing the negative impact of years of service and strengthening the positive effects of training support, providing specific directions for subsequent system optimization.

Based on multiple regression analysis results, this study established a mathematical model for predicting system usage performance. The main regression equation in the study is as follows: $UP = 2.156 + 0.512LA + 0.456ID + 0.435TS - 0.186WY + \varepsilon$, where: UP (Usage Performance): system usage performance, LA (Language Ability): user language ability, ID (Interface Design): system interface design, TS (Training Support): organizational training support, WY (Working Years): working years, ε : random error term, and 2.156 is the constant term. The model's coefficient of determination $R^2 = 0.526$, adjusted $R^2 = 0.512$, F-value = 45.678 ($p <$

0.001), indicating good explanatory power. The standardized regression coefficients show that language ability (0.512) has the largest impact, followed by interface design (0.456) and training support (0.435), while working years (-0.186) shows a negative impact. All coefficients passed the 0.05 significance level test, with VIF values less than 2, indicating no serious multicollinearity problems.

5. Discussion and Analysis

5.1. Discussion of Major Research Findings

Based on the preceding research results, this study has reached the following major findings regarding the relationship between language preferences and performance in university staff's use of management information systems: (1) Regarding language preferences, there is a clear trend toward diversification. Although Chinese interface remains the primary choice (45.83%), the proportion of bilingual interface usage (41.67%) is approaching that of Chinese interface, reflecting the internationalization characteristics in university informatization processes. This finding differs from previous research conclusions that users primarily rely on native language interfaces, indicating evolving language needs among university staff. (2) The study reveals significant differences in language preferences among different groups, particularly teaching staff showing stronger language diversity (46.40% bilingual interface usage), closely related to their job nature and international communication needs. This finding supplements existing research on how occupational characteristics influence language choices, emphasizing the crucial role of job nature in language use behavior. (3) The research confirms a significant correlation between language choice and system usage performance, with bilingual interface usage showing the strongest positive correlation with all performance indicators (correlation coefficients 0.476–0.524), providing important implications for system design. (4) In the analysis of influencing factors, personal language ability ($\beta = 0.512$) and system interface design ($\beta = 0.456$) demonstrate the strongest influence, indicating that the interaction between personal characteristics and technical features is key to determining usage effectiveness. (5) Organizational environmental factors, especially training support ($\beta = 0.435$), are prominently emphasized, supplementing previous research understanding of organiza-

tional support roles. The study also found a weak negative correlation between years of service and language preference ($\beta = -0.186$), suggesting a complex relationship between seniority and innovation acceptance.

5.2. Theoretical Significance Analysis

This study has made the following theoretical contributions through empirical analysis of the relationship between language preferences and performance in university staff's use of management information systems: (1) The study expands the research scope of management information system usage behavior theory by introducing language preference as a key variable into the research framework, deepening understanding of factors influencing user behavior. (2) The study constructs a theoretical model of the relationship between language preference and system usage performance, systematically explaining the mechanism between the two. The finding of strong correlation between bilingual interface usage and system performance (correlation coefficients 0.476–0.524) not only validates the applicability of language adaptation theory in information systems but also enriches theoretical dimensions of system effectiveness evaluation. (3) The study reveals the influence mechanisms of three categories of factors - personal characteristics, organizational environment, and system characteristics - on language preferences and usage performance, particularly identifying the dominant roles of language ability ($\beta = 0.512$) and interface design ($\beta = 0.456$). (4) The research confirms the moderating role of organizational environment, especially training support ($\beta = 0.435$), in language use behavior, supplementing organizational support theory in information system research. (5) The finding of a negative correlation between years of service and language preference ($\beta = -0.186$) provides new research directions for technology innovation acceptance theory. Additionally, the study makes methodological innovations by constructing a multi-dimensional evaluation index system, providing a referenceable research paradigm for similar studies.

5.3. Analysis of Practical Implications

The research findings on language preferences and usage performance in university staff's management information system usage provide important practical implications.

(1) Regarding system design, the results show that bilingual interface usage has the strongest positive correlation with system performance (correlation coefficients 0.476–0.524), suggesting that system developers should strengthen bilingual interface design and optimization. This includes ensuring not only the completeness and accuracy of bilingual interfaces but also the convenience and consistency of switching between the two languages. Particularly in the translation and display of technical terms, a standardized reference mechanism needs to be established to meet different users' needs. (2) In terms of user training, the study finds that language ability ($\beta = 0.512$) is the most important factor affecting system usage effectiveness, indicating that universities should strengthen staff language training, especially in improving foreign language application abilities for administrative and teaching support staff. Training content should be integrated with actual system usage scenarios, emphasizing practicality and targeting. (3) Regarding organizational support, the research shows that training support ($\beta = 0.435$) has a significant impact on system usage effectiveness, suggesting that university administrators need to establish a comprehensive support system, including developing language usage guidelines, providing technical support services, and establishing user feedback mechanisms. (4) In terms of differentiated services, the research finds significant differences in language preferences among different groups, requiring system design to consider characteristics of different user groups and provide personalized language setting options. For example, more English interface options can be provided for teaching staff, while practical functions in Chinese interfaces can be strengthened for administrative staff. (5) Regarding system optimization, the importance of interface design ($\beta = 0.456$) is prominently emphasized, suggesting that system maintenance personnel should continuously monitor user experience, timely optimize interface design, and improve system usability and friendliness. Additionally, the study finds that frequent language switching may affect work efficiency, indicating the need to consider how to reduce the operational cost of language switching and provide more intelligent language switching mechanisms in system design. These practical implications provide specific action guidelines for improving the effectiveness of management information systems and have important reference value for promoting university informatization construction.

6. Conclusions and Recommendations

6.1. Research Conclusions

Through questionnaire surveys and data analysis, the study reached four empirically supported main research conclusions and implications: (1) Language usage shows diversified characteristics, with data showing Chinese interface usage at 45.83% and bilingual interface at 41.67% ($p < 0.05$), indicating the need to strengthen multilingual support functions; (2) Significant differences exist among different groups, with variance analysis ($F = 15.42$, $p < 0.01$) showing teaching staff prefer bilingual interfaces (46.40%), while administrative staff (52.78%) and teaching support staff (53.16%) prefer Chinese interfaces, suggesting system design should consider differentiated needs; (3) Regression analysis ($R^2 = 0.526$, $p < 0.001$) confirms that personal language ability ($\beta = 0.512$), system interface design ($\beta = 0.456$), and organizational training support ($\beta = 0.435$) are main influencing factors, indicating the need to strengthen user training and optimize design; (4) Correlation analysis shows bilingual interface usage has the strongest positive correlation with performance indicators (0.476–0.524, $p < 0.01$), indicating that promoting bilingual interfaces helps improve system usage effectiveness.

6.2. Management Recommendations

Based on this study's survey results and analytical findings, combined with specific requirements of higher education informatization construction, the following recommendations are proposed: 1. For teaching management: Optimize bilingual interface professional terminology comparison functions for core business such as course management and grade evaluation, supporting teachers in conducting internationalized teaching work better. 2. For research management: Strengthen system integration with international academic databases, provide standardized Chinese-English research terminology databases, facilitating international academic exchange for teachers. 3. For administrative management: Focus on optimizing Chinese interface operation processes based on administrative staff's daily work characteristics, while providing necessary English references to meet international communication needs. 4. For training

support: Establish hierarchical, differentiated training mechanisms, providing targeted training courses based on different user groups' work requirements and language foundations. For users with less system experience, provide more basic operational guidance and technical support. 5. For system optimization: Continuously improve interface design based on user feedback, simplify language switching operations, ensure system functions adapt to different user groups' usage habits and professional needs.

Regarding resource allocation, it is recommended to increase investment in system optimization, conduct regular system upgrades and functional improvements, especially in interface design and operation processes, to enhance system usability and friendliness. Meanwhile, attention should be paid to older staff's usage needs, providing them with more technical support and assistance to eliminate language barriers in system usage. The implementation of these recommendations requires attention and support from university management, gradually improving management information system effectiveness through systematic planning and continuous investment.

Author Contribution

Conceptualization, L.Z.; methodology, L.Z.; software, L.Z.; validation, L.Z.; formal analysis, L.Z.; investigation, L.Z.; resources, L.Z.; data curation, L.Z.; writing—original draft preparation, L.Z.; writing—review and editing, L.Z. and L.B.M.Y.; visualization, L.Z.; supervision, M.S.B.O. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement

Some or all of the data and models used during the study are available from the corresponding author upon request.

Conflict of Interest

The authors declare no conflict of interest.

References

- [1] Ji, Y.L., 2024. Construction and Exploration of University Educational Administration Management Information System under the Background of Undergraduate - Graduate Integration Training. *Information Systems Engineering*. 11, 95–98.
- [2] He, N., 2024. Construction of University Document Archives Management Information System. *Cultural Industry*. 29, 136–138.
- [3] Zhou, Y., 2024. Analysis of Resource Optimization Allocation under the Perspective of University Public Housing Management Information System. *Housing and Real Estate*. 27, 111–113.
- [4] Alao, D.O., Priscilla, A.E., Amanze, C.R., et al., 2022. User - Centered/User Experience Uc/Ux Design Thinking Approach for Designing a University Information Management System. *Ingénierie des Systèmes d'Information*. 27(4), 577–590.
- [5] Qin, L., Li, Y., L., Yan, S., 2022. Design and Optimization of University Management Information System Based on Internet of Things and Intelligent Computing Model. *Journal of Sensors*. 1–11.
- [6] Minshun, Z., Juntao, F., Amit, S., et al., 2022. Data mining applications in university information management system development. *Journal of Intelligent Systems*. 31(1), 207–220.
- [7] Hudoiberdiev, H., Soliev, O., Soliev P., 2017. University Management Information Systems for Khujand Polytechnical Institute of Tajik Technical University. *MANAS Journal of Engineering*. (2), 65–71.
- [8] KOÇ, B., ŞENKUL, G., SIĞRI, Ü., 2018. The Factors Affecting Schein's Career Journeys in the Perspective Range of the University Section Preferences: A Research on Career Values of the Students of the Başkent University Management Information Systems Department. *Journal of Current Researches on Social Sciences*. (4), 263–272.
- [9] Wang, H.Y., 2024. Analysis of University Basic Construction Management Information System Construction. *Computer Knowledge and Technology*. 20(27), 69–72.
- [10] Jiang, X.X., Chen, Y.Q., Xie, Y.L., 2024. Construction and Practice of University Laboratory Hazardous Chemicals Management Information System. *Chemical Industry Management*. 17, 112–114.
- [11] He, W.Y., Zhong, J., Chen, Y.S., 2024. Research on University Alumni Management Information System Based on Data Mining. *Information and Computer (Theoretical Edition)*. 36(06), 86–88.
- [12] Chen, M.X., 2024. Research and Application of implementation of these recommendations requires attention and University Enrollment Management Information System Construction. *Vitality*. 42(05), 85–87.
- [13] Zhang, L.L., Zhang, X., 2024. Implementation of University Internal Control under Financial Budget Fund Integration Management Information System. *Audit and Finance*. 2, 59–60.
- [14] Wang, Y.H., Yu, Y., Zhang, H.S., 2023. Design and Implementation of University Graduation Internship Management Information System. *Office Automation*. 28(21), 54–57.
- [15] Zhang, Q., 2023. Research on Innovation and Optimization of University Student Management Information System. *Office Automation*. 28(19), 17–19 + 26.
- [16] Alifu, Y.B., 2023. Exploration and Practice of University State - owned Assets Whole Life Cycle Management Information System Construction. *Modern Information Technology*. 7(09), 34–37 + 41.
- [17] Wang, Y., Wu, B., Zhou, J.P., 2023. Analysis and Research on Current University Asset Management Information System. *Inner Mongolia Science Technology & Economy*. 6, 70–72.
- [18] Li, W., 2022. Discussion on the Importance and Implementation Strategy of University Information Management. *Office Automation*. 27(18), 32–35.
- [19] Zhang, X.Y., 2022. Development of University Human Resource Management Information System. *electronic Technology & Software Engineering*. 15, 208–211.
- [20] Wang, L.J., Yang, H., 2022. Some Thoughts on the Construction of University Asset Management Information System. *China Management Informationization*. 25(10), 68–70.
- [21] Hudoiberdiev, H., Soliev, O., Soliev, P., 2017. University Management Information Systems for Khujand Polytechnical Institute of Tajik Technical University. *MANAS Journal of Engineering*. (2), 65–71.
- [22] Twahirwa, N.J., Ntivuguruzwa, C., 2024. Enhancing teachers' and students' conceptual understanding of physics through smart classrooms and comprehensive assessment management information system. *Cogent Education*. 11(1).
- [23] Shah, A.F., 2014. Assessment of End User Computing Satisfaction (EUCS) of electronic Hospital Management Information System (eHMIS) in Lady Reading Hospital Peshawar Pakistan. *Pakistan journal of medical sciences*. 40(11), 2458–2463.
- [24] Vista, F.U., Assobry, H.M., Rakhman, F.F., et al., 2024. Data - driven approaches to improving waste manage-

- ment systems. IOP Conference Series: Earth and Environmental Science. 1419(1), 012056.
- [25] Kaindaneh, S., Kadt, D.J., Bechange S., et al., 2024. An assessment of the Education Management Information System in Sierra Leone and potential for enhanced disability inclusiveness. *International Journal of Educational Research Open*. 7, 100399.
- [26] Harahap, A.L., Ramadhani, R., 2024. Design of web based pre - production managerial information system for horticultural product farmers. IOP Conference Series: Earth and Environmental Science. 1413(1), 012120.
- [27] Mekonen, T.Z., Cho, J.D., Nadeem, P.S., et al., 2024. Vaccine Logistics Management Information System at Public Health Facilities in Amhara Region, Ethiopia: A Performance Evaluation. *Healthcare informatics research*. 30(4), 375–386.
- [28] Lei, S., 2024. Construction of supply chain management information system based on networked web service composition technology. *Intelligent Decision Technologies*. 18(3), 1893–1914.
- [29] Molla, A., Kruse, C.L., Karanasios, S., et al., 2024. Designing Information Systems for Infectious Disease Management in VUCA Situations: Insights from a Design Archaeology Analysis of COVIDSafe. *Journal of the Association for Information Systems*. 25(5), 1372–1409.
- [30] Wang, Y.D., Wong, Y.L.E., Cheung, L.W.A., et al., 2024. Implementing the information system for older adult patients post - discharge self - management: a qualitative study. *Age and ageing*. 53(7), afae136.
- [31] Pan, W., Yang, F., 2024. [Design and Application of an IVD Reagent Management Information Systems Based on Unique Code]. *Zhongguo yi liao qi xie za zhi = Chinese journal of medical instrumentation*. 48(3), 315–318.
- [32] Vivek, S., Bandana, S., 2024. Assessment of Quality Management Information Systems in Tower Construction Works. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*. 16(3).
- [33] Davis, F.D., 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*. 13(3), 319 - 340.
- [34] DeLone, W.H., McLean, E.R., 2003. The DeLone and McLean Model of Information Systems Success: A Ten - Year Update. *Journal of Management Information Systems*. 19(4), 9–30.
- [35] Venkatesh, V., Morris, M.G., Davis, G.B., Davis, F.D., 2003. User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*. 27(3), 425–478.
- [36] Baruch, Y., Holtom, B.C., 2008. Survey response rate levels and trends in organizational research. *Human Relations*. 61(8), 1139–1160.
- [37] Mellahi, K., Harris, L.C., 2016. Response Rates in Business and Management Research: An Overview of Current Practice and Suggestions for Future Direction. *British Journal of Management*. 27(2), 426 - 437.
- [38] Nulty, D.D., 2008. The adequacy of response rates to online and paper surveys: what can be done? *Assessment & Evaluation in Higher Education*. 33(3), 301–314.