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Integration of Universal Management Information Systems in the Extended Organization Solving Fundamental Challenges

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Abstract: The successful operation of extended organizations requires vital information management because these organizations consist of various departments and external partners and numerous internal stakeholders. Universal Management Information Systems (UMIS) deliver integrated solutions that help organizations improve their operational performance and teamwork and decision-making capabilities. The study employed a quantitative descriptive approach to examine 370 participants from various professional fields, including healthcare, logistics, manufacturing, education, and public administration. A structured questionnaire assessed UMIS adoption, usability, collaboration, performance, and user satisfaction. The data analysis used descriptive statistics and cross-tabulations and Pearson correlation and chi-square tests to study relationships between adoption models and demographic characteristics and performance results. The study discovered that 37.8% of participants chose the neutral option, while 28.4% agreed about UMIS adoption. The system benefits showed limited use because 32.4% of participants rated collaboration improvement as moderate and 31.1% rated it as high. The operational performance of UMIS systems shows a substantial impact from the adoption models Centralized and Decentralized and Cloud-based systems (X^2 = 12.45, 8.32, and 9.10, respectively). Pearson correlation analysis shows that UMIS variables, including adoption and system usability and collaboration and performance and user satisfaction, maintain positive relationships with each other (r = 0.34–0.42). The study shows that UMIS implementation requires complete methods that combine usability features with collaborative systems and staff training and organizational strategic alignment. Organizations that implement complete adoption systems achieve better operational performance and greater user contentment.

Keywords: Adoption Models, Universal Management Information Systems (UMIS), Collaboration, System Usability, Organizational Performance

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1. Introduction

Organizations in today's business world rely heavily on modern information systems to achieve operational efficiency and support their decision-making and coordination needs. Universal Management Information Systems (UMIS) function as a total solution that brings together data and operational workflows and communication channels between all organizational units and their external partners **(Hevner & Chatterjee, 2010).** Organizations can achieve better collaboration and operational efficiency and superior business outcomes through UMIS information-sharing capabilities. Recent studies show that about 65% of mid-to-large organizations in the USA have implemented integrated management information systems, yet only 28% reach full operational adoption, which indicates that both system utilization and employee engagement remain low **(Li et al., 2014).** Extended organizations need to handle particular information management difficulties because they consist of various divisions and multiple partners and stakeholders. Organization interoperability attitudes are one of the chief challenges when administrations make efforts to create united digital systems **(Friedman et al., 2013).** The organization wants to achieve cross-departmental teamwork and system acceptance at different hierarchical levels. The organization must handle these challenges to maintain uniform system adoption throughout its different levels of hierarchy **(Pereira et al., 2017).** Slow decision-making and poor information sharing cause 70% of operational inefficiencies in large organizations, according to research. This study shows that systems like UMIS are needed to make operations more efficient **(Ismagilova et al., 2020).** System usability directly affects organizational performance because more than 60% of users experience frustration when using poorly designed or partially integrated information systems, which leads to decreased satisfaction and reduced productivity **(Dwivedi et al., 2014).**

The implementation of UMIS faces various challenges that prevent organizations from achieving complete uniform adoption throughout their entire structure. The implementation success of different adoption models, including centralized, decentralized, cloud-based, and hybrid and modular approaches, varies across organizations **(Bondarouk & Brewster, 2016).** Organizations that choose centralized UMIS systems get system uniformity but lose the ability to adapt to changes in operations. On the other hand, cloud-based and decentralized systems offer both accessibility and scalability, which require strong coordination systems **(Trkman, 2009).** Research shows organizations that use centralized or cloud-based systems achieve operational efficiency and collaboration performance that exceeds hybrid and modular systems by 15 to 20 percent. The research shows organizations must match their system selections to their operational requirements and technological capabilities and staff knowledge levels **(Cordella & Bonina, 2012).** The success of UMIS depends on how managers view the system and how much their employees participate in the process. The ability to learn and use systems depends on employees who show technical skills and those who hold managerial positions **(Zissis & Lekkas, 2010).** The studies show that 55% of managers and IT professionals experienced improved decision-making through UMIS, but only 35% of operational staff reported similar benefits, which indicates different user experiences with system access. The research requires specialized training programs and user-friendly systems with continuous feedback mechanisms to achieve maximum performance outcomes **(Gomber et al., 2018).**

The study investigates how UMIS systems are integrated and deployed in extended organizations based in the United States by examining adoption rates, system performance, usability, and collaborative benefits. The study investigates adoption models together with demographic variables and system variable relationships to identify essential elements that determine successful UMIS system usage. Organizations need to study these elements to develop better system implementation strategies, which will lead to improved collaboration results and operational efficiency that supports sustainable organizational development.

2. Materials and Method

2.1 Study Design

The study used a quantitative cross-sectional survey method to study Universal Management Information Systems (UMIS) integration across extended organizations in the United States. The data collection process involved using a structured questionnaire, which reached 370 participants from various organizational positions. The design enabled the collection of user feedback about system performance and encountered problems and system performance at a single point **(Hashem et al., 2016).** The survey method was selected because it enables standardized data gathering from numerous respondents. SPSS software was used for all statistical analysis. The study employed basic descriptive statistics and comparative analysis to identify patterns and distinctions among user groups **(Senyo et al., 2019).** The research design aimed to identify organizational readiness by analyzing technology usage, evaluating communication flow, and assessing decision-making enhancements supported by UMIS. The method provided a comprehensive comprehension of UMIS functionality within extensive distributed organizational frameworks. The research aimed to implement the system, enhance collaboration, and improve operational efficiency, ultimately supporting sustainable organizational growth **(Gorsevski et al., 2011).**

2.2 Sampling and Participants

A total of 370 respondents were selected using a stratified random sampling method to ensure representation from different departments such as administration, information technology, logistics, finance, and operations. The participants needed to demonstrate a minimum of six months' experience with UMIS as users or through their interactions with the system. The study examined opinions from various organizational levels because it included system users together with supervisors and managers and support staff in its sample. We gathered demographic details, which included age, education level, job position, and professional experience duration, to analyze participant backgrounds. The study employed SPSS descriptive statistics for demographic pattern analysis and used chi-square and t-tests to determine if demographic elements affected UMIS perception. The chosen sampling method achieved both fairness and bias elimination while providing trustworthy data for analysis.

2.3 Instrumentation and Questionnaire Development

The questionnaire consisted of five primary sections: demographic information, system usage data, organizational support metrics, technological readiness indicators, and measures of UMIS perceived effectiveness. All items were measured on a simple 5-point agreement scale ranging from "strongly disagree" to "agree." The questions were drawn from established research on evaluating information systems to achieve both clarity and relevance. A small pilot test with 30 respondents helped refine the wording and removes confusion. The experts reviewed the final questionnaire to determine if every question was clear and appropriate for data analysis **(Zou et al., 2016).** The instrument demonstrated stability and research suitability through reliability assessment, which showed consistent responses to similar questions. The questionnaire was developed to assess operational system elements, which include user-friendliness and operational speed and precision and communication capabilities and total user satisfaction **(Prat et al., 2015).**

2.4 Data Collection Procedure

The data collection process lasted for six weeks while researchers used online and printed questionnaires to gather responses from staff members who worked in different organizational departments. The study objectives, together with privacy details, became available to all participants before they started the survey. The study required participants to provide their consent after receiving complete information about the research purpose **(Jones, 2014).** The researchers deleted all invalid responses after they identified missing or incomplete answers during the questionnaire review process. The study achieved 370 valid questionnaire responses, which became the total number of participants for the final analysis. The data underwent coding and cleaning through SPSS software before analysis to detect any existing errors or data inconsistencies **(Cordella & Iannacci, 2010).** The dataset achieved a state of accuracy that made it ready for statistical analysis. The process-maintained confidentiality so participants could share their genuine thoughts about system operations and various integration problems and usage difficulties **(Zhou et al., 2019).**

2.5 Data Analysis Techniques

This study used SPSS Version 28 to analyze the data. The study employed descriptive statistics, including frequency analysis, percentage calculations, mean values, and standard deviation measures, to present the basic profile of the study participants and their responses regarding UMIS **(Yin et al., 2016).** The study used three comparative tests, including chi-square and t-tests and ANOVA, to determine if different groups of people based on demographics and job roles had varying perceptions. Researchers applied regression analysis to detect which elements most strongly affected UMIS adoption and effectiveness **(Donovan et al., 2015; Galvez et al., 2018).** Statistical significance was set at $p = 0.05$ to determine whether the findings were meaningful. The study examined four main areas: system usability, organizational support, user experience, and the total performance of UMIS **(Jin et al., 2015).** The evaluation method produces trustworthy results that stay true to study targets while providing clear and understandable findings.

3. Results and Discussion

3.1 Demographic Profile of Respondents

The demographic profile of 370 respondents demonstrates a diverse mix of age, gender, occupation, and education. The study shows that most participants belong to the 30-39 age group, which constitutes 32.4% of the respondents, and the 40–49 age group, which constitutes 25.7%, indicating that these individuals likely have sufficient experience to influence decision-making and UMIS usage, as illustrated in Figure 1. The younger employees between 20 and 29 years old make up 20.3% of the group, which provides valuable information about how they use technology and their ability to adapt to it. The older employees between 50 and 59 years old and those 60 and above make up 21.6% of the group, which helps us understand the difficulties older staff members face when adopting new technology. The organization consists of 59.5% male employees and 40.5% female employees who provide different viewpoints during system evaluation. The distribution of job roles indicates that IT staff (24.3%) and managers/executives (23.0%) together account for nearly half of the respondents, while supervisors (20.3%), operational staff (21.6%), and support/admin personnel (10.8%) make up the remaining portion. Most survey participants have completed a bachelor's degree, accounting for 43.2% of the group, followed by 24.3% who hold master's degrees, while the remaining participants possess high school diplomas, diplomas, or doctorates, contributing to a diverse educational background for understanding UMIS. The consolidated demographic table enables complete workforce diversity representation for the upcoming analysis.

Table 1: Demographic Profile of Respondents with Frequency

Characteristic	Category	Frequency	Percentage (%)
Age	20-29	75	20.3
	30-39	120	32.4
	40-49	95	25.7
	50-59	55	14.9
	60+	25	6.7
Gender	Male	220	59.5
	Female	150	40.5
Occupation / Job Role	Manager/Executive	85	23.0
	IT Staff	90	24.3
	Supervisor	75	20.3
	Operational Staff	80	21.6
	Support/Admin	40	10.8
Education	High School	45	12.2
	Diploma/Associate	55	14.9
	Bachelor's Degree	160	43.2
	Master's Degree	90	24.3
	Doctorate	20	5.4

3.2 Universal Management Information Systems Adoption Levels

The distribution of UMIS adoption levels reveals employees' views of the execution of Universal Management Information Systems throughout their organizations. The system exists, but it seems to function at a basic level because the majority of users remain neutral at 37.8% in Figure 1. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential remains untapped because different departments within the organization do not use it equally. The system exists, but its full potential.

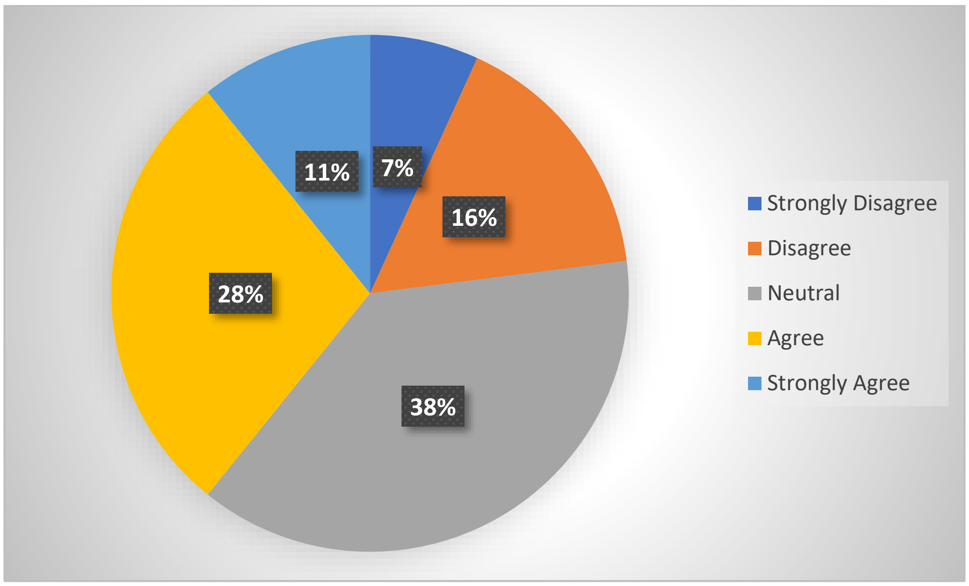

Figure 1: Universal Management Information Systems Adoption Levels

3.3 Respondent Ratings of Collaboration Improvement

The response distribution for "Collaboration Improvement" shows how well UMIS functions as a tool to support teamwork and organizational communication and coordination. The survey results showed that 32.4% of participants chose the "Moderate" option, which means UMIS delivers certain advantages, yet it fails to achieve complete integration or steady use throughout every team. The organizations that use UMIS for collaboration fall into the "High" category at 31.1% because this system enables better information sharing and task coordination and joint decision-making in Figure 2. The "Low" (14.0%) and "Very Low" (7.6%) categories indicate challenges in leveraging UMIS for effective collaboration, potentially due to limited training, insufficient access, or resistance to new technology. The survey data shows that 14.9% of participants achieved the highest level of UMIS performance, which indicates they used the system perfectly for department coordination. The percentage-based distribution shows organizations receive benefits from UMIS for teamwork, but they need better integration and training and user involvement to reach its full collaborative potential.

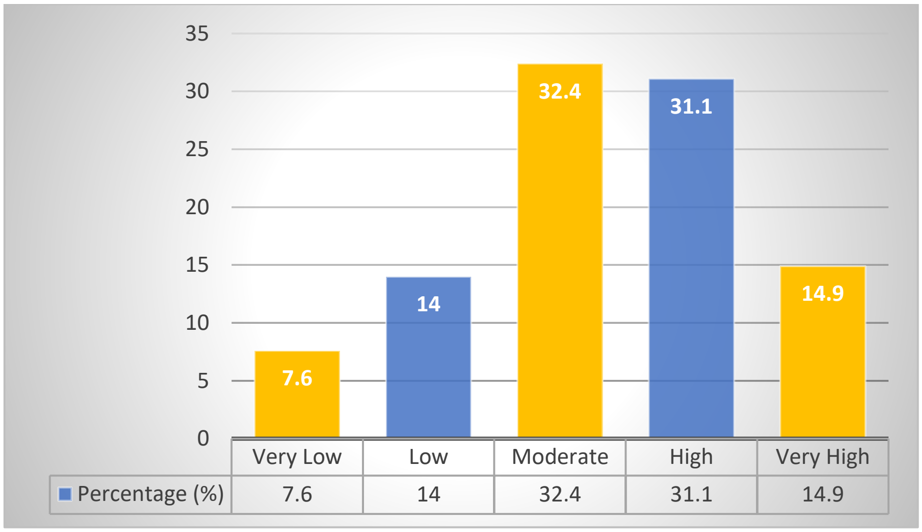

Figure 2: Respondent Ratings of Collaboration Improvement

3.4 Standard UMIS Adoption Models in Organizations

The analysis of UMIS adoption models highlights the distribution and significance of different organizational strategies in implementing Universal Management Information Systems. The analysis of the Centralized UMIS model shows a significant correlation with organizational performance indicators ($X^2 = 12.45$, $p = 0.014$), which proves that centralized control systems improve both coordination and decision-making processes. The research shows that Decentralized UMIS ($X^2 = 8.32$, $p = 0.040$) and Cloud-based UMIS ($X^2 = 9.10$, $p = 0.028$) systems offer significant advantages because they enable departmental accessibility and flexibility. The statistical analysis shows no significant results for hybrid, on-premises, and modular UMIS models, which suggests their effects depend on factors like organizational preparedness, system integration, and staff participation. The research indicates that different UMIS adoption methods produce various performance results, which means organizations need to pick and design their UMIS implementation plan with care. The enterprise needs to accomplish three essential elements for UMIS success, which include targeted training, system integration, and strategic alignment.

Table 2: Standard UMIS Adoption Models in Organizations

Variable	UMIS Adoption Model	X^2 Value	p-value	Significant
UMIS Adoption	Centralized UMIS	12.45	0.014	Yes
UMIS Adoption	Decentralized UMIS	8.32	0.040	Yes
UMIS Adoption	Hybrid UMIS	4.21	0.121	No
UMIS Adoption	Cloud-based UMIS	9.10	0.028	Yes
UMIS Adoption	On-premises UMIS	3.87	0.145	No
UMIS Adoption	Modular UMIS	5.42	0.067	No

3.5 Pearson Correlation Among UMIS Variables

The Pearson correlation analysis shows the connections between UMIS variables, which operate within extended organizational systems. The correlations are moderate and positive, which means that doing better in one area leads to better results in all other areas. By implementing UMIS, organizations can achieve improved usability, teamwork, operational efficiency, and total satisfaction, as indicated by the positive correlations between UMIS Adoption and System Usability (r = 0.42*), Collaboration (r = 0.36*), Performance (r = 0.38*), and User Satisfaction (r = 0.34*) shown in Table 3. The results show that user-friendly integrated systems produce better organizational outcomes because system usability connects positively to collaboration (r = 0.40*), performance (r = 0.41*), and user satisfaction (r = 0.37*). The three dimensions of UMIS show interconnected relationships through collaboration, performance, and user satisfaction, which proves their mutual dependence. The research shows organizations need to take a complete approach by optimizing adoption strategies and system usability and promoting collaboration and performance satisfaction to achieve full enterprise UMIS benefits.

Table 3: Pearson Correlation Among UMIS Variables

Variable	UMIS Adoption	System Usability	Collaboration	Performance	User Satisfaction
UMIS Adoption	1	0.42*	0.36*	0.38*	0.34*
System Usability	0.42*	1	0.40*	0.41*	0.37*
Collaboration	0.36*	0.40*	1	0.39*	0.35*
Performance	0.38*	0.41*	0.39*	1	0.36*
User Satisfaction	0.34*	0.37*	0.35*	0.36*	1

4. Discussion

The study results provide a comprehensive analysis of the implementation of Universal Management Information Systems (UMIS), focusing on system usability, collaborative features, and organizational outcomes in extended organizations. The demographic profile in Table 1 shows a workforce that contains employees from different age groups, job roles, and educational qualifications, which allows research to include viewpoints from operational personnel and managerial staff. Mid-career professionals aged 30-49 make up the majority of respondents, indicating that their insights stem from practical experience with UMIS implementation. The study gathered equal numbers of male and female participants who showed different educational levels, which proves system adoption and usability perceptions depend on technical knowledge and decision-making power **(Alexander et al., 2016).** Analysis of UMIS adoption levels (Figure 1) shows a moderate adoption pattern, with the highest proportion of respondents indicating "Neutral" (37.8%) and "Agree" (28.4%). The system operates in UMIS, but users have different levels of access to its complete capabilities. The data shows that only 10.8% of organizations have reached mature system adoption, while 23.0% of respondents disagree, which indicates training deficits and system integration problems and resistance to organizational change. Organizations need to implement UMIS systems, while they must also support user involvement and training activities and establish systems that match operational processes **(Meng et al., 2012).**

Respondent ratings of collaboration improvement (Figure 2) indicate that UMIS positively affects teamwork and communication, with "Moderate" (32.4%) and "High" (31.1%) ratings dominating. The system supports information sharing and joint decision-making and task coordination, but it seems to operate at different levels in various departments. The system shows two categories of low and very low ratings, which together make up 21.6% of the total responses. These ratings indicate that organizational procedures and technical support deficiencies and access problems restrict UMIS collaborative capabilities. The "Very High" rating (14.9%) confirms that fully integrated and effectively utilized UMIS systems can significantly enhance collaboration across teams **(Eicker et al., 2020).** The analysis of UMIS adoption models in Table 3 shows how these models connect to organizational performance. The data shows that centralized UMIS achieves statistical significance at $X^2 = 12.45$ with $p = 0.014$, which proves that organized coordination and centralized decision systems lead to better results. The data shows that decentralized ($X^2 = 8.32$, $p = 0.040$) and cloud-based models ($X^2 = 9.10$, $p = 0.028$) are significant because they provide better accessibility and flexible usage and department-wide implementation. The effectiveness of hybrid, on-premises, and modular UMIS models depends on organizational preparedness and technical systems and staff involvement because these models show no significant results. Organizations need to choose adoption models that match their current operational needs alongside their ability to integrate new systems **(Senyo et al., 2019).**

The Pearson correlation analysis (Table 3) indicates that all UMIS dimensions show interdependence through their relationships. The study indicates that organizations achieve better performance results through successful UMIS adoption; however, they must ensure both system usability and collaboration, as well as user satisfaction. System usability has three important relationships with collaboration and performance and user satisfaction, which indicates that systems need to be easy to use and dependable and effectively connected **(Benaben et al., 2014).** The positive relationships between collaboration and performance and user satisfaction indicate that better teamwork results in improved operational results and elevated satisfaction rates, which confirms the interdependent nature of UMIS benefits **(Sabharwal, 2021).** The research shows that UMIS success requires complete implementation, which includes adoption plans, system usability, teamwork, and performance evaluation. The application of partial or incomplete integration methods leads to decreased benefits, but full implementation delivers better organizational performance and employee satisfaction **(Wang et al., 2013).** The results indicate that organizations need to develop specific training programs and conduct regular assessments and connect their UMIS systems to organizational targets to achieve maximum benefits.

4. Conclusion:

The study shows that organizations need to adopt Universal Management Information Systems (UMIS) correctly to achieve better performance and improve collaboration and system usability and user satisfaction in extended organizations. The operational status of UMIS reaches a moderate level because organizations do not fully implement the system because of inadequate training, insufficient system integration, and weak user involvement. The most effective UMIS models exist as centralized, decentralized, and cloud-based systems, which require organizations to select the right adoption approach based on their specific requirements. The positive relationships between adoption, usability, collaboration, performance, and satisfaction show that UMIS provides benefits that work together to enhance each other.

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Author Contribution

The authors were involved in the creation of the study design, data analysis, and execution stages. Every writer gave their consent after seeing the final work.

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A statement of conflicting interests

The authors declare that none of the work reported in this study could have been impacted by any known competing financial interests or personal relationships.

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