

## **Determinants of HRIS Adoption in Universities of North East India using SEMOPY**

**Dr. Bimal Deb Nath , Assistant Professor , Department Management , NEHU**

### **Abstract :**

This paper investigates factors that affect the adoption of the Human Resource Information Systems (HRIS) in Universities in the North Eastern region of India, namely Meghalaya and Assam. This study adopts the Technology, Organization, and Environment (TOE) framework, which comprises technological, organizational, and environmental factors. In addition, this paper also considered managerial characteristics as suggested by prior studies. A questionnaire-based survey was used to collect data from teaching and non-teaching staff of the universities of Assam and Meghalaya. Structural equation modeling (SEM), a multivariate statistical analysis technique, is conducted with SEMOPY, a SEM package of Python, to analyze structural relationships between variables under study. Exogenous variables include technological, organizational, environmental, and managerial characteristics and endogenous variable levels of ICT adoption. The results of SEM analysis show that few exogenous variables consisting of technological, organizational, managerial Characteristics, and environmental significantly influence the endogenous variable, i.e., the level of HRIS adoption. However, a few latent constructs of these are not significant as the p-values are more than the significance level. This study provides valuable insights for government and policymakers and Higher Education Institutes to develop strategies that can promote and foster the adoption of HRIS.

### **Keywords:**

**HRIS adoption, SEM, Universities, North Eastern Region of India, and Python**

**Introduction:**

The roles of higher education in sustainable economic and social development increase year by year, and accordingly, the number of Institutions is also increasing tremendously. In India alone, the number of higher education institutions has increased significantly, and it eventually became the highest education system in the world. To solve global challenges in areas that matter to society, such as healthcare, environmental protection, resource security, international development, and population trends, these higher education institutions(HEIs )must meet the demands of the quality of good education for all. To increase access to and quality of higher education, it is essential to have skilled human capital, timely and accurate data, and HR-related information on potential employees to manage human resources well. HR has also become a source of competitive advantage in the present competitive scenario where organizations are increasing in number and size (Michael et al., 2012). To do so, integrating information technology with employees' day-to-day activities should be the organization's prime focus. The technology change will increase the quality of employee information and substantially affect the overall effectiveness of the HEIs. Thus, successfully adopting and implementing innovations such as the Human Resource Information System within the HR department to deal with these challenges and opportunities can be critical determinants of Institutional success. This aspect has gained momentum due to swift advancements in Information and Communication Technology (ICT) (Alam,2016) . However, the effectiveness and success of HRIS are largely unexplored and unknown. Several researchers have developed conceptual models to verify the adoption of IT behavior aspects, and the majority still need to give a complete account of the factors underlying the adoption of IT innovation behavior in general and the adoption of HRIS in particular. This paper explores the variables that significantly influence HRIS adoption in Universities in the North Eastern region of India.

**HRIS in Higher Education Institutions:**

Higher education institutions in India have recently faced a significant task: improving learning environments and reducing administrative operating costs. Human resource management in these institutes is changing, not only in its working area but also in its working connotation. This is changing from management by hand to management by computer. Traditional human resources management systems are not fit for the needs of recent times. There are apparent shortages in the conventional system, so human resources management needs to adopt new technology and management modes and show a new state to face the world (Samkarpad,2013).

Moreover, the demands of higher education institutions, such as the ability to effectively budget for and manage different types of employees and recruit and retain skilled members, require a powerful business solution to help them manage student, graduate, and employment information and financial data. The complete integration of HR data with student information systems and the application of effective HRIS systems in higher education institutions can provide the utmost use of resources, speed, compatibility, updateability, accessibility, data integrity, privacy, and security (Rawat, 2008). This system would be able to structure appropriate development by placing the right people in the right place at the right time- quality human resource and personnel management (Altarawneh & Al-Shqairat, 2010). With HRIS, human resources management practices, and organizational commitment might create organizational success and develop a competitive advantage for educational institutions, and eventually, academic leaders can use human resource management practices to enhance the commitment of their staff. Thus, the Institute leadership initiative should focus on developing and professionalizing human resources management practices through HRIS to build an institution's sustainable, competitive environment (Samkarpad, 2013).

HRIS was primarily seen to support human resource management's "planning, administration, decision-making, and control activities (Ball, 2001). However, many organizations use HRIS only for day-to-day work rather than strategic HR management. Eventually, human resource professionals and researchers started to rethink achieving organizational goals by adopting Human Resource Information Systems(HRIS) (Saleem, 2012; Al-amour et al., 2013).

Thus, HRIS has become the parameter for improvement that can give a competitive edge to Higher Education. However, there is a need for more exploration of the linkage between HRM, Information Technology, and the successful adoption of HRIS (Absar & Mahmood, 2011). In addition, very few pieces of literature address this integration in the context of Higher Education

institutions in India. This study primarily focuses on identifying the challenges and determinants of HRIS adoption in the context of higher education institutions of Assam and Meghalaya.

## **Literature Review**

Much literature has predominantly focused on the adoption of ICT in organizations and found that little systematic attention is being paid to the issues surrounding HRIS adoption. Some various theories and models address ICT adoption behavior, and to explore HRIS adoption behavior, the present study is adjusted with ICT adoption. In the following section, relevant theories and models that can explain factors affecting HRIS adoption are highlighted below:

### **Factors Affecting HRIS Adoption**

HRIS adoption was expected to positively impact the operational aspects of HR functions. However, in adopting and implementing HRIS by an organization, its effectiveness and success of HRIS adoption largely remained in the hands of its end-users. The various theories show the diversity of perspectives on factors that affect the IT and HRIS adoption process. The few relevant theories and models that address the ICT adoption process are the Technology Acceptance Model Davis (1989; DePietro et al. (1990)), The Diffusion of Innovation Theory (Rogers, 2003), the Model of PC Utilization (MPCU) (Triandis, 1977). and The Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Information Systems Success Model Davarpanah (2013), The UTAUT model, and the TOE Model. Venkatesh et al., (2003). Among these, the TOE framework was adopted in many IT adoption studies and provides a useful analytical framework that can be used for studying the adoption and assimilation of different types of innovation. It also has a solid theoretical basis, consistent empirical support, and potential application across different studies (Oliveira and Martins, 2011). This TOE framework was developed in 1990 (Tornatzky and Fleischer 1990). It identifies three characteristics of an enterprise's perspective that influence the process by which it adopts and gears a technological innovation: technological perspective, organizational perspective, and environmental perspective.

Thus, this framework, like technology-organization-environment (TOE), can provide an appropriate starting point for studying HRIS adoption. It is consistent with the diffusion of innovation (DOI) theory by Rogers that emphasizes individual characteristics and internal and external characteristics of the organization in studying drivers for new technology. Internal factors are explained by Technology, organization, managerial characteristics, and environment as external factors. In this research, the influences of adopting HRIS have been adjusted for ICT adoption. In the following section, HRIS adoption is discussed as the dimensions of technology, organization, managerial characteristics, environment, and organizational performance.

### **Internal Factors:**

#### Technology/Innovation of HRIS:

Technology/Innovation is seen as a necessary measure for adoption when adopting and using ICT. Rogers (1995) introduced the DOI(Diffusion of Innovation) model, namely a popular model in the investigation of the behavior of users in adopting new technological innovation(Azadegan & Teich,2010). This model proposed five perceived characteristics of innovation which consist of relative advantage, compatibility, complexity, trialability, and observability.

Golding et. al, (2008) argued that relative advantage was expressed by a perceived benefit. Perceived benefits include reduced transaction costs, improved cash flow, increased productivity, and better customer service. Compatibility included dynamic content, experience, and needs of potential adopters, resistance to change, support from the top management, and suitability of business processes with suppliers and customers. Complexity is measured based on difficulty use, problems with locating desired information, rapid changes and technological advances, technical constraints, the skills and training required, and complex to skills for employees. Trialability is defined as the degree to which an innovation can be used on a trial basis before confirmation of the adoption must occur. Furthermore, It can be measured in the presence of advice from consultants, the opportunity to test the technology, experiment with ICT tools, the ability of employees, much effort in testing technology, and the new technology complicated to use. The Observability refers to the degree of visibility of the new technology results (Beatty,et. al,2001)

Besides the five characteristics that are referred to in DOI, few previous studies have recognized ICT security (confidentiality) and the cost of ICT adoption as significant factors affecting ICT adoption (Ghobakhloo et. al,2012 ).The literature also reveals that one of the main reasons that determine innovation adoption is ICT security and confidentiality. Many organizations are reluctant to embrace ICT as well as e-commerce mainly as security issues. Organizations may face security problems in many forms, including payment security, privacy, and confidentiality of information or viruses. The major barrier to wider adoption is ICT security and the ability of organizations in the forms of confidentiality, integrity and availability of information assets (Kannabiran ,2012).The present study therefore seven characteristics as the dimension of technology variables that influence technology adoption, and accordingly following hypotheses are formulated :

- H1: The relative advantage of HRIS influences HRIS adoption.
- H2: The compatibility of HRIS influences HRIS adoption.
- H3: The complexity of HRIS influences HRIS adoption.
- H4: The trialability of HRIS influences HRIS adoption.
- H5: The observability of HRIS influences HRIS adoption.
- H6: The cost investment of HRIS influences HRIS adoption.
- H7: The security of HRIS influences HRIS adoption.

#### Organization:

The organization tends to adopt the technology if it the consistent with their culture, values, preferred work practices, and the availability of the infrastructure. Geographically, an organization that has an international or global orientation will accelerate the adoption process of ICT. The global scope enables the cost efficiency to get the new market. Using ICT adoption globally needs resources. In a company, the most important resources to adopt the new technology consist of finance, human and technology resources and to adopt these, employee knowledge is really important to the company's ability to adopt ICT and use it. In adapting to the new technology, the structure of the organization should be supportive so the organization tends to adopt it and gets maximum benefit from it. With that Companies or organizations that adopt HRIS must be supported by the strategy of the company (Tambunan,2011). From the explanation above it can be concluded that there are namely six dimensions of organizational

variables that are demographic characteristics, knowledge, resources, strategic orientation, and globalization and structure. All these latent dimensions are explained below in Table 2: The following hypotheses are formulated:

- H8: The knowledge of HRIS influences HRIS adoption.
- H9: The resources of HRIS influence HRIS adoption.
- H10: The strategic orientation towards HRIS influences HRIS adoption.
- H11: Globalisation with HRIS influences HRIS adoption.
- H12: The Demographic characteristics of the organization influences HRIS adoption.
- H13: The Structure of the organization influences HRIS adoption.

#### Managerial Characteristic :

Managerial characteristics in this research explain that people decide HEIs just like the Director or the instructional Head. Several research stated that individual characteristics play a crucial role in the implementation of new technology. The literature suggests a clear link between the attitude of the top management towards IT and successful application of IT. Manager who has knowledge of information technology has an effect on the adoption of ICT (Jeon et.al ,2006).

Accordingly, we proposed the following hypotheses are framed :

- H14: The attitude towards innovation influences HRIS adoption.
- H15: The knowledge of the new IT influences HRIS adoption.

#### **External factor;**

##### Environment

The environment in research is something that outside institutes and cannot be controlled. Environmental pressures that HEIs are facing include Intensified competition among HEIs to attract the best students and faculty members and at the same time strict rules and reduced funding of the universities by the state as well as central governments. The external environment has a strong impact on the decision to adopt ICT (Bayo-Moriones & Lera-López,2007).So the Following hypotheses are proposed :

- H16: The support from the government for the use of HRIS influences HRIS adoption.

H17: The influence of customers and suppliers on the use of HRIS influences HRIS adoption.

In addition, the adoption gap of ICT usages also occur due to poor infrastructure, lack of training and content of ICT, lack of end users in ICT and lack of research on strategies to improve the use of ICT in rural areas(Matsenjwa et al., 2019; Zilian & Zilian, 2020; Kim et al., 2021). Some

Table 1 : Influencing Factors of ICT / HRIS adoption

Dimension	Latent construct	Observed variables	Code
Technology	Perceive advantage(PTA) relative	the cost	TP1
		customer relationship	TP2
		productivity	TP3
	Compatibility(CMP)	business need	TC1
		supplier and customer - support	TC2
		resistanc	TC3
			TC4
	Complexity (CML)	using	TCC1
		skill	TCC2
		information problem	TCC3
		advance	TCC4
		technical	TCC5
	Trialability(TRL)	training	TCC6
		advice	TT1
		test	TT2
		experiment	TT3
		ability	TT4
		effort	TT5
	Observability(OBS)	complicated	TT6
		Result	TO1
		benefit	TO2
		satisfaction	TO3
		profit	TO4
		productivity	TO5
		quality	TO6
	Cost Investment (CI)	abreast	TO7
expensive		TCO1	
money and time		TCO2	
maintenance		TCO3	
Security(SEC)	transaction	TS1	
	protection	TS2	
	risk	TS3	
	privacy	TS4	
Organization	Knowledge	Knowledgeable -	OK1
		competent	OK2
		proficiency	OK3



	Resources	financial	OR1
		technology	OR2
		human	OR3
	Strategic Orientation	Sstrategic	OS1
		coordination	OS2
		alignment	OS3
	Globalization	competitiveness	OG1
		participation	OG2
		Relatedness	OG3
	Demographic characteristics	size	OD1
		experience	OD2
		Type of busioness	OD3
	Structure	Centralization	OSS1
		Formalization	OSS2
		Specialization	OSS3
Standarization		OSS4	
Complexity		OS5	
Instutalization of HRM		OSS6	
Comprehensiveness of HRM		OSS7	
HR Role		OSS8	
Managerial Characteristics	Attitude toward innovation	receptive	MA1
		attitude	MA2
		capability	MA3
		realize	MA4
	Knowledge of the new IT	Use	MK1
		Awareness	MK2
		Rapid	MK3
Environment	Government	fund	EG1
		assistance	EG2
		information	EG3
		encouragement	EG4
	Competitive Pressure	pressure	EC1
		demand	EC2
		counterpart	EC3

Source : Researcher's Compilation

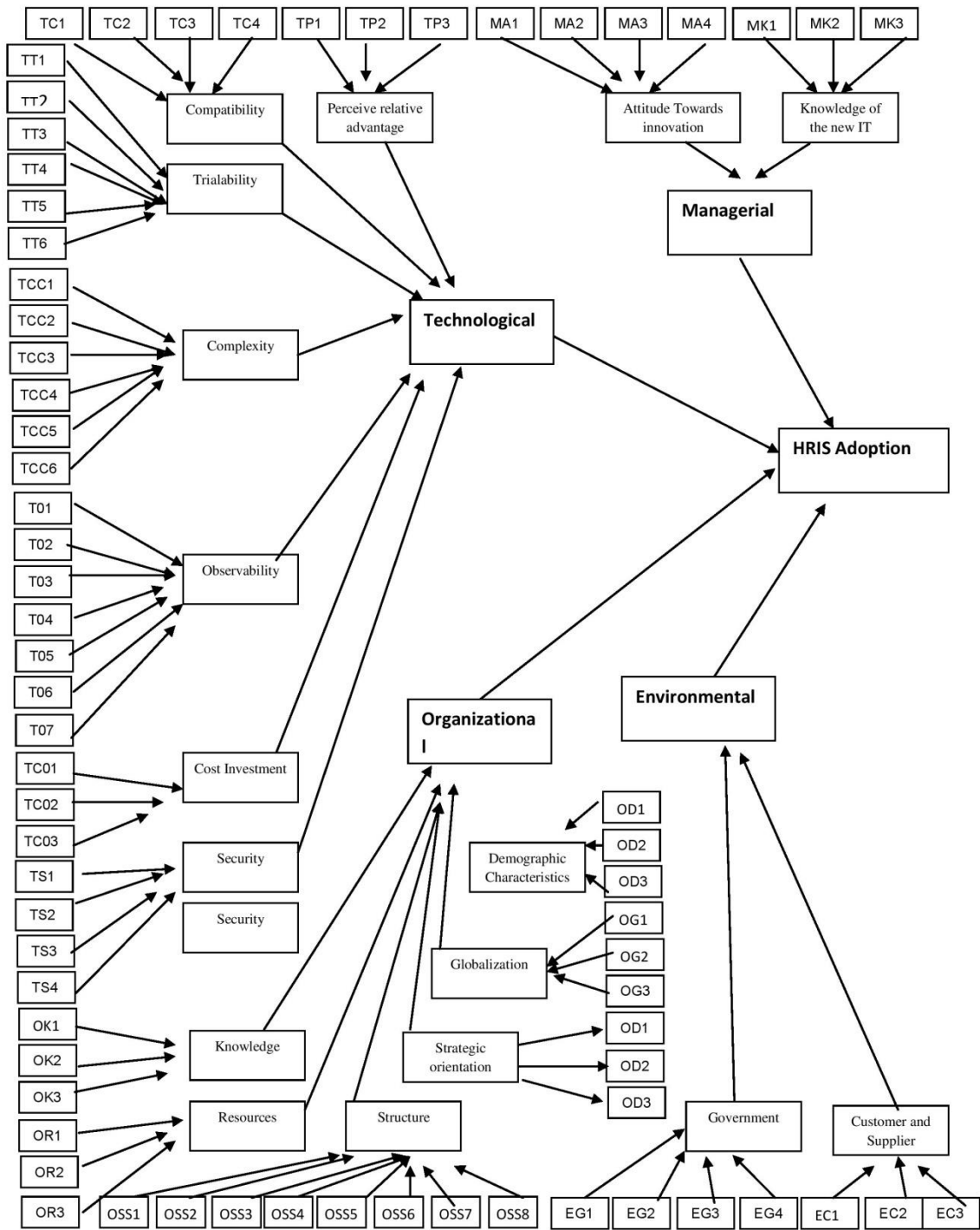
other findings even indicate that the adoption of IT is also hindered by excess information and communication also (Rumata & Sakinah, 2020).

Based upon the literature review discussed above, the framework of this study can be seen in figure 1. It shows proposed conceptual framework, that integrates the influences and impacts of ICT adoption as a whole. The results of a literature review suggest 17 hypotheses of ICT adoption consisting of technology, organizational, managerial characteristics and environment.

### Methodology :

This study was designed to collect data from both primary and secondary sources. The population for the study was all the thirty-four universities in both Assam and Meghalaya as

Figure 1: Proposed Research Model



shown in Table 1. The respondents include nonteaching and teaching faculty members from these institutions. These institutions have been categorized into three (3) strata, viz., (i) Central University, (ii) State University, and (iii) Private University. Following a stratified random sampling technique with the proportional allocation of 1: 4, a representative sample size was taken as mentioned in Table 1. Then from each of the universities, ten teaching and ten nonteaching members were considered for the study. Consequently, a total of one hundred sixty respondents were considered as the sample for the study.

**Table 2: List of universities in Assam and Meghalaya**

	Universities	Total no	Sample (1:4 ratio)	Source
Assam	Central University	2	1*	<a href="https://highereducation.assam.gov.in/portlets/profiles-of-universities-and-colleges">https://highereducation.assam.gov.in/portlets/profiles-of-universities-and-colleges</a>
	State university	14	3	
	Private university	6	1	
Meghalaya	Central University	4	1	<a href="https://rusameghalaya.nic.in/documents/institution-in-meghalaya.pdf">https://rusameghalaya.nic.in/documents/institution-in-meghalaya.pdf</a>
	State university	0	0	
	Private university	8	2	
Total		34	8	

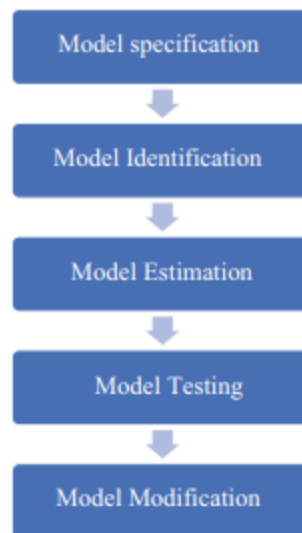
\*To get the representative sample, atleast one no of central university is considered out of 2

Initially, variables for the study were considered for secondary data sources. For these journals, textbooks, and other relevant publications were referred and finally, twenty-four variables are considered as mentioned in Table 2. Figure 1 shows a conceptual diagram of moderation. This diagram shows that there are direct effects that are hypothesized to cause changes in HRIS adoption. –main effect as well as interaction effect of all the variables.

The survey method of research was used for the study for which a questionnaire was designed based on the variables mentioned in table 2. The questionnaires consisted of both open-ended and closed-ended questions. These questionnaires were sent to the email IDs of respondents. As

well as they were also contacted on phone calls. Finally, 132 valid responses were received with a response rate of 82%. The data for the above 24 variables were collected on a 7-point response scale. Finally, the collected dataset contains data related to all four dimensions namely Technological, Organizational, Managerial Characteristics, and Environment. The Technological dimensions are addressed by seven hypothetical latent constructs: Perceived relative advantage, Compatibility, Complexity, Trialability, Observability, and Cost Investment. Perceived relative advantage, Compatibility, Complexity, Trialability, and Observability are measured by three, four, six, six, seven, and three observed variables respectively as shown in Table 2. The organization dimension is composed of latent constructs such as knowledge, resources, strategic orientation, globalization, demographic characteristics, and structure, and each of these is defined by three different observed variables except structure which is defined by eight variables as shown in Table 2. The managerial dimension is again composed of two latent constructs and these are attitude toward innovation and Knowledge of the new IT. These two latent constructs are measured by four and three observed variables. Finally, the environment is also composed of two latent constructs and measured by four and three observed variables respectively. Finally, this dataset was cleaned and coded using Python version 3.12.

**To examine the** Hypotheses H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, H11, H12, H13, H14, H15, H16 and H17 mentioned in earlier section, We will be using Structural equation modeling (SEM), a



**Fig. 2** Steps in SEM analysis

multivariate statistical analysis technique to analyze structural relationships between variables under study. This technique uses a combination of factor analysis as well as multiple regression, to analyze the structural relationship between measured variables and latent constructs. This method is preferred by researchers because it estimates the multiple and interrelated dependence in a single analysis. SEM is considered to realize the moderation effect of exogenous variables such as technology, organizational, managerial characteristics, and Environment. The different steps of SEM analysis are mentioned in Fig 2 ;

### **Research Findings:**

In the course of the literature survey, we investigated the internal and external factors that influence the use of HRIS and ICT adoption in HEIs. The Internal factors are technology, organization, and managerial characteristics whereas the external factor is the environment. Technologies are defined and presented in a variety of latent dimensions consisting of perceived relative advantage, compatibility, complexity, trialability, observability, cost of ICT, and security. The organization is also associated with ICT. The literature reported that this may include demographic characteristics knowledge, resources, strategic orientation, and globalization and structure. Similarly, individual characteristics play a crucial role in the implementation of new technology .The external factor that mostly influences the adoption of HRIS is the environment and consists of latent constructs such as government support, and competitive pressure.

Using the survey method data was collected from the two states of the North Eastern Region (NER) of India. From the pilot test, the statistical procedures were utilized to validate the outcome of the questionnaire. Cronbach's alpha was used to validate the consistency of measurements in the questionnaire. Based on the reliability test all variables are reliable with Cronbach's alpha value greater than 0.6 ( $\alpha > 0.6$ ). It indicates satisfactory internal- consistency reliability among all of the variables used in this study.

This study evaluated structural models and measurement models that have been developed based on theoretical considerations. Before proceeding further, popular assumptions are verified, such as a) A larger sample size and b) multivariate normality. After verifying model assumptions, finally dataset is finally imported into the Python software package, which can handle full datasets and automatically computed covariance matrices.

The model is built with a semopy model in python and only the standardized parameter estimates are shown in Table 3. The results of the SEM model exhibit the relation between observed variables and the level of HRIS adoption. To verify the structural model, the model Fit indices are calculated. The model resulted in a no significant chi-square test with p p-value of 0.08 ( $p > .05$ ) and the conclusion that the model does adequately reproduce the population summary statistics. Although widely used, the chi-square test is often overpowered and commonly leads to misleading, and thus other fit indices are tested. One class of indices is the *relative* fit indices that compare the fit of the model to some pre-defined baseline models which are the NFI and CFI, and for this study values were .096 and .91 which exceeding .90 are often taken to indicate a good fit. Another class of indices are the absolute fit indices that evaluate model fit in terms of model degrees-of-freedom; the most common one is RMSEA and values for this are .048 falling below .05 are often taken to indicate good fit.

The results from SEM analysis indicate that technological factors namely, Perceived relative advantage, complexity, trialability, Cost of ICT, and ICT security are positively influencing the HRIS adoption in HEIs whereas compatibility significantly influences HRIS adoption but they have a negative relationship.

Moreover, this study reveals that organizational factors such as resource strategy, Globalization, and Demographic characteristics of universities significantly influence HIRS adoption whereas Structure influences negatively. Likewise in the case of managerial factors, only knowledge of IT positively influences ICT adoption. Finally, environmental factors such as competitive pressure have a positive influence on ICT adoption whereas Government support has a negative influence on the adoption.

However, few constructs consisting of technology, organizational, managerial characteristics and environment found insignificant in HRIS adoption and so these are not shown in Table 3. For example, Observability does not influence HRIS adoption as the p-value for the same is less than 0.05.

In summing up, The structural relationship of SEM shows that all the dimensions such as technological, organizational, managerial characteristics, and environmental are significant although few hypotheses such as H5, H8 and H14 are not significant. However, Table 3 shows that hypotheses H1,H2,H3,H4,H6,H7,H9,H10,H11,H12,H13,15,H16 and H17 are accepted as these significantly influence HRIS adoption either positively or negatively.

### Research Limitations and Direction for Further Research:

This current study focuses only on universities of the North Eastern Region of India; this method may limit the generalization of the research findings towards HEIs. Also, the scope of this study was only limited to two states, further study can broaden the geographical area of the sample to give better insights into the results. The researcher suggests that future studies may include a deeper analysis of respondents and the institution characteristics to link ICT and HRIS adoption. Furthermore, this study is limited to the HEI subsector, but the TOE framework could be replicated in different subsectors to examine the impact of HRIS adoption across different sectors.

Table 3 : Results of SEM showing significant p- values

lval	op	rval	Estimate	Std. Err	z-value	p-value	Hypothesis
PRA	~	Technology	0.030828	0.141278	0.268991	0.009	H1 accepted
COMPAT	~	Technology	-0.65986	0.516149	-1.27842	0.0201	H2 accepted
COMLEX	~	Technology	0.040828	0.141278	0.288991	0.007	H3 accepted
TRAIL	~	Technology	5.327124	1.072935	4.964999	6.87E-07	H4 accepted
CI	~	Technology	0.292923	0.268394	1.091391	0.0275	H6 accepted
SECURITY	~	Technology	0.819089	0.259449	3.157032	0.001	H7 accepted
Resources	~	Organizational	0.041622	0.087025	0.478274	0.063	H9 accepted
Strategic	~	Organizational	0.770675	0.192326	4.007123	6.15E-05	H10 accepted
Globalization	~	Organizational	1.918258	0.238423	8.045617	8.88E-16	H11 accepted
Demographic	~	Organizational	1.918211	0.238415	8.045668	8.88E-16	H12 accepted
Stucture	~	Organizational	-0.05618	0.20075	-0.27984	0.077	H13 accepted
Knowledge_IT	~	Managerial	0.999931	0.016574	60.32974	0	H15 accepted
Competive pressure	~	Environment	-0.14854	0.124304	-1.19498	0.023209669	H17 accepted
Government Support	~	Environment	0.030828	0.141278	0.188991	0.00672588461	H16 accepted
ICT_adopt	~	Technology	6.978382	197.5936	0.035317	0.009718271	
ICT_adopt	~	Organizational	-3.19181	90.37468	-0.03532	0.009760339	
ICT_adopt	~	Managerial	0.002569	0.109501	0.023456	0.009812862	
ICT_adopt	~	Environment	1.000069	0.025575	39.10314	0	

SEM is mostly conducted with the SPSS and AMOS software by social science researchers. However, most packages are not free or open-source. Whereas R and Python are open-source software and Python has an added advantage as this can be deployed on web servers. This study has been analyzed with an SEMOPY package in the Python platform to satisfy the need for an



SEM package that could be easily integrated into developmental and research pipelines in Python.

### **Conclusion :**

Higher education in India is in a state of flux and particularly HEIs have been under pressure to carry out structural reforms to become more competitive. In India, where education is turning into a large commercial market, HEIs particularly universities have to face competition from other types of educational institutions in the world.

The human resources management system of many HEIs is not fit for the needs of the new times and pays scant attention to a basic issue like HRIS for lack of realization. The traditional human resources management system has become inefficient in the processes of the new times. Though, a few institutes started to use traditional human resources information systems but are facing many shortages in the system and these are (i) Data is not precise and accurate (ii) The system only has the function of storing information and processing. (iii) Information is processed repeatedly. (iv) The data is unable to be shared and exchanged. In the absence of a proper flow of information and data, many decisions are taken in a subjective and ad hoc manner ( Millan et al., 2021). Due to this, organizations not only fail to realize their human potential but also demotivate their employees with their subjective and unsystematic decisions derived from either unsystematic data or no data.

The successful adoption of HRIS towards processes of the new times is the need of the hour as the adoption of such HRIS can be challenging as it can be costly and it can take a long time before espouse pre-adoption benefits become available after HRISs are fully adopted. To date, HRIS adoption remains under-researched, and therefore, addressing it with appropriate methodology integrated with advanced statistical tools can provide a valuable contribution to both research and practice. The present study provides a clear understanding of the factors contributing to HIRS adoption among HEIs in North Eastern Region. The findings will help the stakeholders to take necessary steps which subsequently will improve the professional standing of HEIs by providing a competitive advantage.

## References:

- Absarm, M, M, N., Mahmood, M. (2011). New HRM Practices in the Public and Private Sector Industrial Enterprises of Bangladesh. A Comparative Assessment. *International Review of Business Research Papers*, 1(2),118-136.
- Alam M (2016), Use of ICT in Higher Education, *International Journal of Indian Psychology*, Volume 3, Issue 4, No. 68, ISSN:2348-5396 (e), ISSN:2349-3429 (p), DIP:18.01.208/20160304, ISBN:978-1-365-39398-3
- Al-dmour, R. H., Love, S., & Al-zu, Z. M. F. (2013). Factors Influencing the Adoption of HRIS Applications: A Literature Review. *International Journal of Management & Business studies*, 3(4) 4, 9-26
- Altarawneh, I. & Al-Shqairat, Z. (2010). Human Resource Information Systems in Jordanian Universities, *International Journal of Business and Management*, 5(10), 113-128.
- Azadegan, A., & Teich, J, Effective benchmarking of innovation adoptions: A theoretical framework for e-procurement technologies. *Benchmarking: An International Journal*,17(4), 2010, 472–490. doi:10.1108/14635771011060558
- Ball, K. (2001). The use of human resource management systems: a survey. *Personnel Review*, 30(6),677-693
- Beatty, R. C., Shim, J. P., & Jones, M. C, Factors influencing corporate web site adoption : a time-based assessment. *Information & Management*, 38(6), 2001, 337 – 354
- Davarpanah, A and Mohamed, N. (2013). Human Resource Information Systems (HRIS) Success Factors in A Public Higher Education Institution Context. 3rd International Conference on Research and Innovation in Information Systems – 2013 (ICRIIS'13), 79–84.
- Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use and User Acceptance of information technology, *MIS Quarterly*, 319-339.
- DePietro, R., Wiarda, E., & Fleischer, M. (1990). The context for change: organization, technology and environment, in Tornatzky, L.G. and Fleischer, M. (Eds). *The Process of Technological Innovation*, Lexington Books, Lexington, MA, 151-75
- Fishbein, M.,& Ajzen, I. (1975). *Beliefs, Attitude, Intention and Behavior: An Introduction to Theory and Research Reading*. Addison-Wesley, MA
- Ghobakhloo, M., Hong, T. S., Sabouri, M. S., & Zulkifli, N., Strategies for Successful Information Technology Adoption in Small and Medium-sized Enterprises. *Information*,

3(4), 2012, 36–67. doi:10.3390/info3010036

Golding, P., Donaldson, O., Tennant, V., & Black, K, An Analysis of Factors Affecting The Adoption of ICT by MSMEs in Rural and Urban Jamaica. ECIS 2008 Proceedings Website (p. 237). Jonkoping International Business School Jonkoping University, 2008)

Jeon, B. N., Han, K. S., & Lee, M. J. Determining factors for the adoption of e- business: the case of SMEs in Korea. *Applied Economics*, 38(16), 2006, 1905–1916. doi:10.1080/00036840500427262

Kannabiran, G., Enablers and inhibitors of advanced information technologies adoption by SMEs An empirical study of auto ancillaries in India. *Emerald*, 25(2), 2012, 186 – 209. doi:10.1108/17410391211204419

Kim, J., Gray, J. A., Ciesla, J. R., & Yao, P. (2022). The Impact of an Internet Use Promotion Programme on Communication, Internet Use, and the Extent of Social Networks among Low-Income Older Adults. *Ageing International*, 47(2), 348–371. <https://doi.org/10.1007/s12126-021-09422-0>

Matsenjwa, B., Grobbelaar, S. S., & Meyer, I. A. (2019). Pro-poor value chains for small scale farming innovation: Sustainability improvements through ict. *South African Journal of Industrial Engineering*, 30(4), 156–171. <https://doi.org/10.7166/30-4-2176>

Michael, J., Kavanagh, M., Thite, D., & Johnson. (2012). *Human Resource Information System (2nd Ed.)*. Sage Publication

Millan, J. M., Lyalkov, S., Burke, A., Millan, A., & van Stel, A. (2021). ‘Digital divide’ among European entrepreneurs: Which types benefit most from ICT implementation? *Journal of Business Research*, 125, 533–547. <https://doi.org/10.1016/j.jbusres.2019.10.034>

Oliveira, Tiago, and Maria Fraga. 2011. “Literature Review of Information Technology Adoption Models at Firm Level.”

Pradhan, S., Lama, S., & Bunker, D. (2022). ICT Adoption for Tourism Disaster Management: A Systematic Review. *Proceedings of the International ISCRAM Conference, 2022-November*, 215–227.

Rawat, M. (2008). Application of Human Resource Information System (HRIS) In Higher Education – Holistic Approach. In *Tmsting Islam, Knowledge and Professionalism in ECER Development Conference*, 15-17, December, Kota Bham, Malaysia.

Rogers, E.M. (2003). *Diffusion of Innovations*, 4th ed. The Free Press, New York, NY.

Rumata, V. M., & Sakinah, A. M. (2020). The Impact of Internet Information and Communication Literacy and Overload, as Well as Social Influence, on ICT Adoption by

Rural Communities. *Asia-Pacific Journal of Rural Development*, 30(1–2), 155–174.  
<https://doi.org/10.1177/1018529120977250>

Saleem, I.(2012). Impact of adopting HRIS on three tiers of HRM: Evidence from Developing Economy. *Business Review*, 7 (2), 96-105.

Samkarpad,S. (2013) .Status of Human Resource Information Systems (HRIS) in Universities and Affiliated Colleges in Hyderabad. *The IUP Journal of Organizational Behavior*, XII (2), 20-42.

Tambunan, T. T. H., Development of Small and Medium Enterprises in A Developing Country: The Indonesian Case. *Journal of Enterprising Communities: People and Places in the Global Economy*, 5(1), 2011, 68–82. doi:10.1108/17506201111119626

Triandis, H. C. (1977). *Interpersonal Behavior*. Brooke Cole, Monterey, CA

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.

Zilian, S. S., & Zilian, L. S. (2020). Digital inequality in Austria: Empirical evidence from the survey of the OECD “Programme for the International Assessment of Adult Competencies.” *Technology in Society*, 63. <https://doi.org/10.1016/j.techsoc.2020.101397>

\*\*\*\*\*