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Institutional Factors Influencing the Use of the Information Processing Model in Digital Learning Environment

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ARTICLE INFO			ABSTRACT
Article History:			<i>The study's significance offers policymakers and school administrators insights into how institutional variables, teacher preparedness, and attitude affect the efficient utilization of the information. Using a cross-sectional survey method to gather information from teachers, a quantitative research strategy was used to standardize the adopted surveys. Higher secondary public school instructors, both male and female, made up the study's participants. Selecting participants from the desired population, use a random sampling procedure. The study's sample size was 289, and 205 were answered. The result reveals that the relationship between Institutional Factor and the Information Processing in Digital Learning construct were significantly positive. The finding suggest that Information processing is positively impacted by institutional and support-related aspects, as seen by Student Succeeds best explanatory power among the sub-variables, which is closely followed by Practices Support and Institutional Culture. The Recommendations are suggested to improve the use of the Information Processing Model (IPM) in digital learning contexts. The fundamental setting required for efficient information processing, policymakers should first promote a positive institutional culture that prioritizes digital innovation, teamwork, and open communication. Additionally, Future research could examine (Higher order thinking) HOT variables that potentially impact digital learning outcomes in order to better understand the dynamics of IPM deployment.</i>
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Introduction

Digital learning is increasingly common, requiring students to manage and process large amounts of information online. The Information Processing Model (IPM) explains how learners handle information in six stages: defining the task, locating relevant information, selecting the most useful data, organizing it logically, presenting it clearly, and assessing its accuracy. However, students' ability to follow these steps depends on institutional factors. A positive institutional culture encourages exploration and effective information use, practice support provides tools and guidance such as digital resources and teacher assistance, and a focus on student success through mentoring and academic support motivates learners to achieve better outcomes. Together, these factors shape how effectively students apply the IPM in digital learning environments through the general objectives; To examine the factors of institutional factors on the use of the Information Processing Model (IPM) in digital learning environments and Specific Objectives: To determine the factors of institutional culture on teachers' use of the IPM. To assess the factors effect on practice support on teachers' ability to apply the IPM. To examine the factors of teachers success orientation for the IPM in digital learning. These objectives support by the research question; how do institutional culture, practice support, and teachers' success orientation influence the implementation of the IPM in digital learning?

Statement of the Problem was the integration of digital technologies in education has transformed teaching and learning, providing opportunities to implement instructional models that enhance cognitive processes, such as the Information Processing Teaching Model. However, despite its potential to improve student learning outcomes, the application of this model by teachers remains inconsistent. Research suggests that internal school conditions, or institutional factors. Moreover, teachers' attitudes and readiness toward technology may play critical roles in this process, potentially mediating or moderating the relationship between institutional factors and teaching practices. Without understanding these dynamics, efforts to enhance technology-supported instruction may be ineffective. Therefore, this study seeks to investigate the influence of institutional factors on teachers' use of the Information Processing Teaching Model in digital learning environments, examining the mediating role of teacher attitude and the moderating role of teacher readiness.

The Gap the study was the Information Processing Teaching Model in promoting meaningful learning and deeper cognitive engagement, its effective implementation in digital learning environments remains inconsistent among school teachers. While Maritte and Gawie (2022) highlight strategies for facilitating efficient information processing, there is limited empirical evidence on how institutional factors within schools influence teachers' adoption of these strategies. Furthermore, the roles of teacher attitude as a mediator and teacher readiness as a moderator in shaping the relationship between institutional support and the use of the model are not well understood. This gap guide the ability of policymakers and school leaders to design targeted interventions that enhance teachers' effective application of the model in technology-supported classrooms, ultimately affecting students' learning outcomes and cognitive development (Mutlu, Burak, Hikmet, & Tugba, 2020).

Significance of the Study provides insights for school administrators and policymakers on how institutional factors, teacher attitude, and readiness influence the effective use of the Information Processing Model in digital learning environments. It helps teachers understand the importance of their attitudes and preparedness in adopting technology-enhanced pedagogical strategies. Ultimately, it benefits students by promoting more engaging and cognitively effective learning experiences.

Rationale of the Study showed the rapid expansion of digital learning environments has transformed educational processes, making effective technology integration a priority for modern schooling. Judit and Ida (2024) stated that teachers, institutional support such as access to digital tools, ongoing professional development, and a conducive school culture directly influences their ability to integrate cognitive teaching models like the Information Processing Model into instruction, which is crucial for promoting deep learning and information retention. Research shows that institutional support significantly promotes teachers' use of technology and reduces barriers such as technostress, thereby enhancing instructional quality and engagement. Moreover, teacher attitude toward technology plays a critical role in shaping instructional decisions; positive attitudes have been linked to greater willingness to adopt digital tools and pedagogical innovations, while readiness for digital instruction predicts teachers' confidence and competence in enacting such models (Saira, Arjumand, Yonis, & Golooba, 2024). Then, Ran, Rafiza, and Siti (2024) stated that understanding how institutional factors influence teacher practices is essential for allocating resources effectively, designing targeted professional development, and fostering a school climate that values innovation and pedagogical excellence. Evidence also highlights that effective leadership and school climate enhance digital integration and teacher engagement, which in turn improve learning outcomes for students. Next, Mutlu et al. (2020) stated that identifying the mediating role of teacher attitudes and the moderating influence of teacher readiness offers actionable insights for educational policymakers to create supportive policies and frameworks that bridge the gap between technology availability and its effective instructional use. Lastly, Mikkel and Karen (2024) stated that students, as the ultimate beneficiaries, are more likely to experience improved learning experiences and outcomes when teachers are supported institutionally and are both attitudinally and practically prepared to leverage technology in cognitively meaningful ways. Thus, this study addresses a pressing need to unpack the complex interplay between institutional factors, teacher attitudes, and readiness to inform stakeholders on how to enhance digital pedagogy within contemporary learning environments.

Literature Review

Strong institutional components make it easier for students to follow the IPM's procedures and improve their learning in digital settings. In essence, educational institutions establish the conditions and resources necessary for students to efficiently digest information. Robert, (2018) stated that modern education now revolves around digital learning environments, which require students to not only obtain material but also efficiently analyze and apply it. Margarita, Nitza, and Yuri (2017) stated that the Information Processing Model (IPM), which covers the phases of identifying, finding, choosing, organizing, presenting, and evaluating information, offers a methodical framework for comprehending how students gather, arrange, and use information. However, Komang, Dewa, and Kadek (2022) stated that institutional features that mold learners' attitudes, behaviors, and capacities to engage with digital content have an impact on this model's efficacy in digital learning. The impact of Institutional Culture, Practice Support, and Student Success Orientation on the implementation of IPM in digital learning settings is examined in this review of the research.

Institutional Factors in Digital Learning

Institutional Culture

The common values, attitudes, customs, and behaviors that characterize an institution's learning environment are referred to as its institutional culture. Mamdouh (2023) asserts that culture has an impact on students' motivation, engagement, and general academic behavior. Nimitha and Zakkariya (2021) stated that a positive institutional culture in digital learning environments

promotes technology adoption and motivates students to actively interact with the material. For example, schools that place a high value on creativity, teamwork, and critical thinking foster an atmosphere where students feel empowered to investigate and apply knowledge methodically. According to Bokolo (2021) stated that teachers and students are both impacted by institutional culture, which influences teaching methods that facilitate structured information processing.

Practice Support

The policies, materials, and advice offered by organizations to improve learning outcomes are referred to as practice support (Brent, Jo, Ronny, Bram, & Chang, 2022). This comprises tutorials, teacher support, digital infrastructure, and access to learning management systems (Inger, Dan, & Halvdan, 2022). Students can find and organize information, traverse digital platforms effectively, and apply it to academic assignments with the help of effective practice support. Within the framework of the IPM, institutional support guarantees that students have the resources necessary to participate in the six phases of information processing: defining tasks, finding pertinent sources, choosing important information, meaningfully organizing content, effectively presenting knowledge, and evaluating comprehension. Ahmed and Shuyan (2020) stated that Students may find it difficult to apply these phases without organized practice assistance, which would lower the effectiveness of digital learning.

Student Success Orientation

An institution's dedication to supporting student achievement and offering opportunities for students to realize their potential is reflected in their student success orientation. Mentorship programs, academic advice, and interventions targeted at improving cognitive and metacognitive abilities are examples of this element (Corlane, Charlette, & Kweku, 2018). Promoting self-regulated learning, a crucial element of the IPM, requires a strong focus on student success. Ade, Della, Turki, Tommy, and Akhmad (2023) stated that in digital learning settings, learners are more likely to critically examine content, apply knowledge across tasks, and engage deeply with information when they are guided and motivated by institutional success frameworks.

The Information Processing Model in Digital Learning

According to the Information Processing Model (IPM), learning is a cognitive process that involves gathering, storing, and retrieving information. Mariette and Gawie (2022) stated that IPM offers an organized method for controlling information overload and improving comprehension in digital learning environments.

Defining

In the defining stage, the problem or job is identified, and the amount of information needed is determined. Research indicates that students who receive institutional assistance in task definition are more accurate in locating pertinent data and developing research questions (Lei, Lina, Can, Xianzhi, & Can, 2020).

Locating

Researching entails looking through databases, online repositories, and digital sources for information. Students' capacity to get reliable and correct information is greatly improved when they have access to institutional resources like curated e-libraries and subscription databases (Kevin, David, Alex, & Yonatan, 2022).

Selecting

Assessing information for quality, relevance, and reliability is necessary when making a decision. Tatiana, Tatiana, and Olga (2021) stated that organizations that offer information literacy training assist students in developing critical thinking abilities so they can discern between relevant and irrelevant information.

Organizing

Organizing involves arranging information in a logical structure to improve comprehension and retrieval. Elizaveta et al. (2020) stated that this step is made easier by digital learning tools including note-taking programs, mind mapping software, and collaborative platforms, but their successful implementation depends on institutional support and culture.

Presenting

Effective knowledge communication through reports, presentations, or the production of digital information is the main goal of presenting. Students' capacity to communicate ideas clearly and professionally is improved by educational institutions that enable digital expression and encourage creativity (Hanjie, 2023).

Assessing

Evaluating one's comprehension and the caliber of information absorbed is referred to as assessment. Shahid, Rodina, Mujahid, Atif, and Victor (2018) stated that peer reviews, self-assessment tools, and institutional feedback mechanisms encourage students to consider how they process knowledge, which supports ongoing development.

Linking Institutional Factors to the Information Processing Model

Research suggests that institutional factors significantly influence each stage of the IPM in digital learning. A positive institutional culture encourages engagement and curiosity, enabling effective defining and selecting of information (Linda, Giancarlo, & Daniele, 2020). Adequate practice support provides resources and guidance for locating, organizing, and presenting information. Finally, Oprea (2025) stated that student success orientation motivates learners to assess and refine their knowledge critically. Ana, Ljubomir, and Stojan (2020) stated that together, these institutional factors create an ecosystem in which the IPM can be applied effectively, maximizing learning outcomes in digital environments.

The literature indicates that the effectiveness of the Information Processing Model in digital learning environments is not solely dependent on learners' cognitive abilities but is profoundly shaped by institutional factors (Ahmad & Maria, 2019). Thru fostering supportive cultures, providing practical learning resources, and prioritizing student success, educational institutions can enhance students' engagement with each stage of information processing (Muhammad, 2025). Future studies should empirically examine the interplay between these institutional factors and IPM stages to provide actionable insights for digital learning design (Bernd & Peter, 2018).

The theoretical base of this study was the Information Processing Model (IPM) explains how learners perceive, encode, store, and reclaim information in learning environments (Atkinson & Shiffrin, 1968), emphasizing the importance of attention, cognitive organization, and rehearsal for effective knowledge acquisition in digital learning. The application of the IPM in digital learning environments is significantly influenced by institutional factors. Technological infrastructure, such as reliable digital tools and platforms, enables seamless interaction with content, supporting

effective cognitive processing (Neil, 2016). Institutional policies promoting teacher training and digital pedagogy enhance content design aligned with cognitive processing principles (David, Maribeth, Rebecca, Mary, Rommel, 2009), while a culture of innovation and student-centered learning encourages the creation of interactive, cognitively-aligned digital materials. Investment in digital tools and multimedia resources reduces cognitive load and enhances attention and memory retention (John, 1988), and continuous administrative and technical support minimizes distractions, allowing learners to focus on processing information effectively. Collectively, these institutional factors create an environment that facilitates the cognitive processes described by the IPM, optimizing learning outcomes in digital settings.

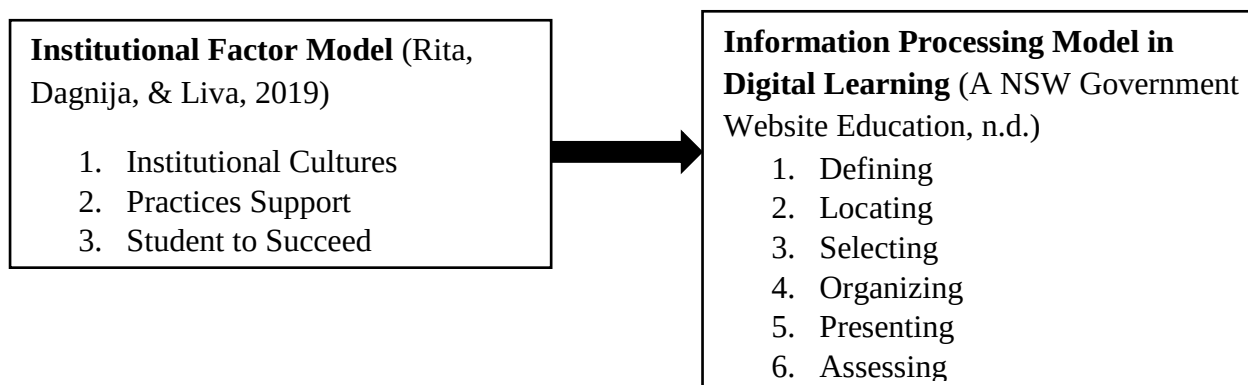


Figure No. 1. Conceptual Model of the Study

The study conceptual model develop based on the Institutional Factor model by Rita, Dagnija, and Liva (2019) has three sub-variables; Institutional Cultures, Practices Support, Student to Succeed. The Information Processing Model in Digital Learning has six sub-variables; Defining, Locating, Selecting, Organizing, Presenting, Assessing (A NSW Government Website Education, n.d.).

Institutional factors are the formal and informal rules, structures, norms, and systems that shape and constrain behavior, decisions, and interactions within a society, organization, or economy. These factors include Institutional Cultures, Practices Support, Student to succeed that influence how teachers act and how institutions operate. They determine the incentives, opportunities, and constraints faced by teachers and are often beyond the control of teachers (May, 2021). The sub-variables such as; Institutional Cultures: In academic terms, institutional culture is a deeply embedded system of collective cognitions and behavioral expectations that define the identity and operational logic of an institution, going far beyond formal policies to include the implicit assumptions and shared meanings held by its members (Scott, Bruce, Simon, Paul, & Arjan, 2021). Practices Support: Practice Support refers to the assistance, resources, and guidance provided to help individuals, teams, or organizations effectively implement, improve, and sustain professional practices (Michelle, Marjon, Letje, & Klaas, 2021). Student to Succeed: A student who demonstrates the skills, mindset, and behaviors necessary to achieve their goals, overcome challenges, and thrive academically, socially, and personally (Nadia, 2022).

The Information Processing Model in Digital Learning: The Information Processing Model in digital learning influences teachers to redefine teaching as the facilitation of learners' information processing. Teachers become designers of experiences that guide how students perceive, process, store, and retrieve knowledge, often using digital tools to enhance memory, engagement, and understanding (Komang, Dewa, & Kadek, 2022). It has six sub-variables; Defining: It refers to the ways in which certain factors, forces, or agents shape, guide, or affect the methods, approaches, and effectiveness of teaching and learning. In other words, it is about how something (Rajendra,

2021). Locating: It refers to the process of identifying and analyzing the factors, sources, or forces that shape teaching methods, strategies, and educational practices. It's about understanding what affects how educators teach and how students learn (Pankaj, 2025). Selecting: refers to the process of identifying and choosing the factors, methods, or sources that shape teaching and learning practices. In simpler terms, it's about recognizing what affects how teaching is done and making conscious choices about which influences to apply in educational settings (Dunhong, & Jing, 2023). Organizing: It refers to the ways in which the structure, planning, and coordination of teaching and learning activities shape educational practices and outcomes. It highlights how organization whether in curriculum design, classroom management, instructional sequencing, or resource allocation affects how teaching is carried out and how students learn (Olga, Natalya, Irina, Anatoliy, Anastasia, & Yulia, 2020). Presenting: It refers to the act of demonstrating or showing how various factors, ideas, or methods affect teaching and learning practices. In simpler terms, it's about highlighting or explaining the ways certain influences shape the methods, strategies, and effectiveness of education (Dobrova, 2021). Assessing: is the process of examining, measuring, and evaluating the factors, forces, or individuals that affect teaching methods, strategies, and practices. It involves analyzing how various elements such as educational theories, societal trends, technology, policy changes, teacher beliefs, or student needs impact the way teaching is designed and delivered in the classroom (Praveena, Martin, & Maryanne, 2020).

Methodology

The positivist paradigm serves as the foundation for this quantitative research approach, which encourages objective measurement and statistical examination of phenomena using numerical data. To investigate correlations or differences between variables in a methodical and repeatable way, it makes use of null hypothesis testing. The assumption that the data distribution is normal, which is the foundation of this parametric statistical methods and for reliable inference and extension of findings to the relevant population. The research will investigate how institutional factors such as infrastructure availability, organizational support, policy frameworks, and faculty training affect the adoption and application of the Information Processing Model in digital learning contexts.

A cross-sectional survey design to collect data from teachers Standardized adopted questionnaires with Likert-scale items will be used to measure participants' perceptions, attitudes, and reported practices, while statistical analyses, including correlation, Exploratory Factor Analysis and Confirmatory Factor Analysis will examine the effect on institutional variables and the effective use of the model. This approach examine relationship and differences between the two models and explore the underlying factors without preconceived concepts. It integrate cognitive-based instructional strategies in digital learning environments. The data was collected with the help of a questionnaire. The first scale, Institutional Factor was adopted by (Muhammad, Iffat, & Muhammad, 2024) and second, Information Processing Model in Digital Learning Scale was adapted and customized for this study (A NSW Government Website Education, n.d.). Researcher adapted instrument on the basis of theoretical framework of the study. Tool consisted of close ended 59 items and Five-Point Likert scale was used to collect responses.

The population of the present study comprised male and female higher secondary public school teachers. A total of 1,155 teachers serving in 40 higher secondary schools in Rawalpindi during the academic session 2023–2024 were included as the population of this study website (SIS Punjab, 2022). The present study employed a simple random sampling technique to select participants from the target population. Sample size used for this study was in 289 (TGM, 2024). The responses received 205 in number. Ethical considerations were strictly observed in this study, with informed consent obtained from all participants, confidentiality of responses. This study has some

limitations. Being a cross-sectional survey, it captures responses at a single point in time, which may not reflect changes over time. Self-reported data may be subject to bias, such as social desirability or inaccurate recall.

Result

1H₀: There is no significant correlation between the sub-variables of Information Processing (Defining, Locating, Selecting, Organizing, Presenting, and Assessing).

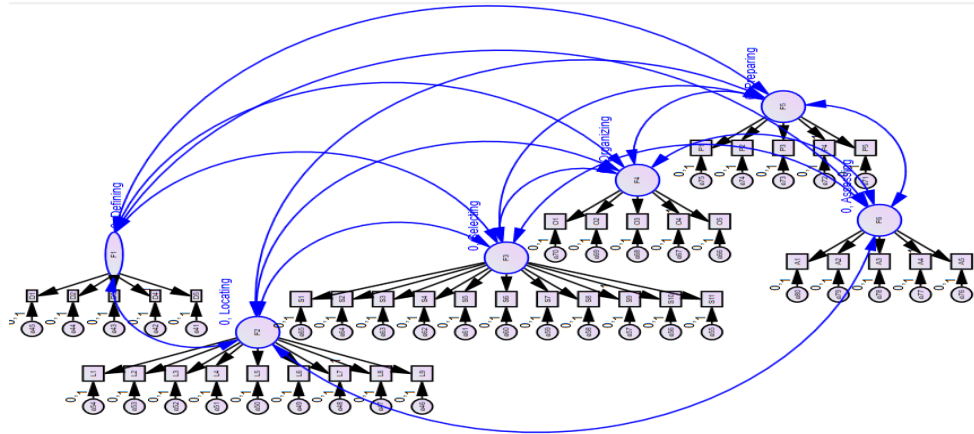


Figure No. 2. Correlation between the Sub-variables of Information Processing

Table No.1. Frequency, Percentage, Mean and Correlation of Institutional Factor (n=205)

Independent Variable	Sub Variables	Sd	Mean	r
Institutional Factor	Institutional Culture	0.715	4.18	1
	Practices Support	0.830	4.28	0.966
	Student Succeed	0.853	4.04	0.835
		0.657	4.10	0.918

According to the table No. 1. Most respondents believe that institutional elements are highly significant. Institutional Culture is one of the sub-variables that shows a very favorable opinion of the institutional culture. Additionally, it has a very high positive correlation with the institutional factor, suggesting that institutional culture plays a significant role in the institutional factor. Practices Support demonstrates a great degree of consensus among participants. Additionally, there is a large association between it and the institutional factor, suggesting that supporting behaviors have a major impact on the institutional environment. Student Success indicates that respondents think institutional factors play a major role in helping students succeed. A very strong positive link with the total institutional element is indicated by the correlation coefficient. Therefore, the Information Processing and its sub variable are positively correlated and null hypothesis was accepted.

2H₀: There is no significant correlation between the sub-variables of Institutional Factor (Institutional Cultures, Practices Support, Student to Succeed).

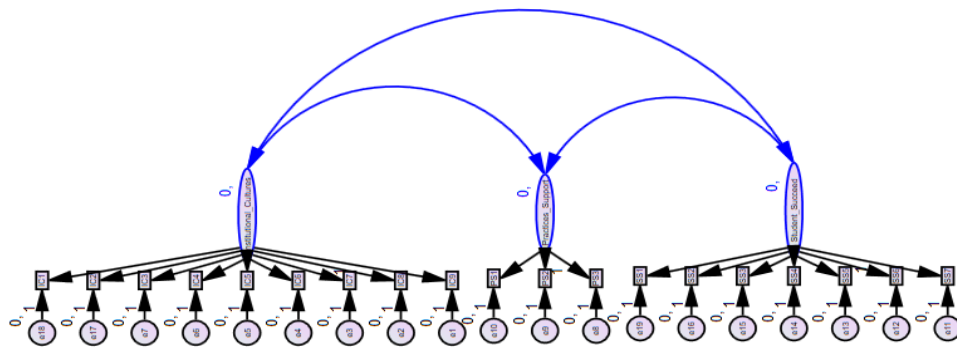


Figure No. 3. Correlation between the Sub-variables of Institutional Factor

Table No. 2. Frequency, Percentage, Mean and Correlation of Information Processing (n=205)

Dependent Variable	Sub Variables	Sd	Mean	r
Information Processing		4.35	0.707	1
	Defining	4.26	1.020	0.858
	Locating	4.26	0.701	0.952
	Selecting	4.39	0.685	0.967
	Organizing	4.25	0.900	0.872
	Preparing	4.42	0.775	0.956
	Assessing	4.49	0.623	0.968

The correlation coefficients and descriptive statistics for information processing and its sub-variables are shown in the table 2. With a standard deviation of 0.707 and an overall mean score of 4.35 for information processing, the respondents demonstrated a high degree of information processing proficiency with comparatively little variability. Therefore, it is proven that Institutional Factor and it's the sub-variables significant correlation.

3H₀: There is no underlying factor structure among the Institutional Factor sub-variables (Institutional Cultures, Practices Support, Student to Succeed); are not covariance and do not form a single latent factor.

Table No. 3. (EFA) Total Variance Explained Institutional Factor Scale (n=205)

Component Matrix	Initial Eigenvalues			Communalities		
	Total	% of Variance	Cumulative	Extraction	% of Variance	Cumulative
1) IC (0.943)	7.498	83.309	83.309	0.890		
2) PS (0.840)	0.626	6.960	90.269	0.706		
3) SS (0.877)	0.333	3.702	93.972	0.769		

According to the initial eigenvalues, Component 1 accounts for 83.309% of the variance with an eigenvalue of 7.498. This suggests that the first component accounts for most of the volatility in the data and is extremely dominating. With an eigenvalue of 0.626, Component 2 explains 6.960% of the variation, whereas Component 3 explains 3.702% of the variance with an eigenvalue of

0.333. The model explains a significant amount of the entire variance, as seen by the cumulative variance explained by all three components, which is 93.972%. The highest loading is displayed by IC (0.943), which is followed by SS (0.877) and PS (0.840). These high loadings show that each of the three variables significantly contributes to the factor structure and has a strong correlation with the extracted component. These conclusions are further supported by the communalities following extraction. The communality values for IC, PS, and SS are 0.890, 0.706, and 0.769, respectively. These numbers show that the extracted component accounts for a significant amount of the variance in each variable. Therefore, Institutional Factor sub-variables are positively covariance with each other.

4H₀: There is no underlying factor structure among the Information Processing sub-variables (Defining, Locating, Selecting, Organizing, Presenting, Assessing); are not covariance and do not form any latent factors.

Table No. 4. (EFA) Total Variance Explained Information Processing Scale (n=205)

Component Matrix	Initial Eigenvalues			Communalities		
	Total	% of Variance	Cumulative	Extraction	% of Variance	Cumulative
4) D (0.886)	0.037	0.408	99.892	0.785		
5) L (0.924)	0.184	2.043	96.015	0.854		
6) S (0.963)	0.142	1.576	97.591	0.927		
7) O (0.841)	0.103	1.140	98.730	0.707		
8) P (0.970)	0.010	0.108	100.000	0.941		
9) A (0.958)	0.068	0.754	99.484	0.919		
Total			7.498		83.309	83.309

All of the variables in the component matrix had significant factor loadings, ranging from 0.841 to 0.970, suggesting a strong correlation between each variable and the extracted component. The factors that contributed most significantly to the component were P (0.970) and S (0.963), followed by A (0.958) and L (0.924). Even though variable O (0.841) had the lowest loading, it was still relevant because it was higher than the permissible threshold of 0.60. The extracted component explains a significant amount of variance, according to the initial eigenvalues. The final extraction produced an eigenvalue of 7.498, which is greater than the generally advised minimum of 60% for social science research and accounts for 83.309% of the total variance. This demonstrates that the factor solution is adequate. The model's resilience is further reinforced by the communalities. High extraction communalities were shown by all variables, ranging from 0.707 to 0.941, suggesting that the extracted component accounts for a significant amount of each variable's variance. Therefore, the Information Processing and its sub-variables are positively covariance and the hypothesis was rejected to fail.

Table No. 5. KMO and Bartlett's Test (n=205)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.720
Bartlett's Test of Sphericity	Approx. Chi-Square	3223.617
	df	36
	Sig.	0.000

The Kaiser Meyer Olkin (KMO) measure of sample adequacy and Bartlett's Test of Sphericity were used to assess the acceptability of the data before factor analysis. For factor analysis, the KMO was sufficient. This implies that the relationships between the variables were compact enough to produce meaningful and trustworthy components. Additionally, the statistically significant results of Bartlett's Test of Sphericity. This outcome supports the suitability of using factor analysis and validates the existence of meaningful correlations between the variables.

5H₀: The hypothesized Information Processing -sub-variable model (Defining, Locating, Selecting, Organizing, Presenting, and Assessing) does not adequately fit the observed data.

Table No. 6. CFA Result for the Measurement Model Institutional Factor Scale of 19 items (n=205)

Sub-Variables	Items	Factor Loading	CR (0.06)	AVE (0.05)	P
Institutional Cultures	IC1	0.992	0.073	13.556	***
	IC2	1.263	0.071	17.773	***
	IC3	0.966	0.071	13.523	***
	IC4	0.688	0.051	13.390	***
	IC5	0.699	0.058	11.991	***
	IC6	1.003	0.078	12.799	***
	IC7	0.542	0.072	7.518	***
	IC8	0.845	0.078	10.834	***
	IC9	1.000			
Practices Support	PS1	0.660	0.076	8.648	***
	PS2	0.939	0.060	15.757	***
	PS3	1.000			
Student Succeed	SS1	22.966	18.966	1.211	***
	SS2	12.707	10.592	1.200	***
	SS3	11.809	9.773	1.208	***
	SS4	12.068	9.982	1.209	***
	SS5	8.576	7.225	1.187	***
	SS6	5.676	4.928	1.152	***
	SS7	1.000			

The validity and reliability of the domains Institutional Culture, Practices Support, and Student Success were evaluated using the measuring model. Item performance was assessed using factor loadings, critical ratios, and significance levels. Nine items (IC1–IC9) were used to measure the construct of institutional culture. Three items were used to measure Practices Support (PS1–PS3), and all items showed high and statistically significant factor loadings. These imply that the indicators of the Practices Support construct are a reliable way to measure it. There were seven items in the Student Success construct (SS1–SS7). The findings show that every item makes a substantial contribution to the assessment of student success. Therefore, Information Processing -sub-variable model were adequately fit the observed data.

6H₀: The hypothesized Institutional Factor-sub-variable model (Institutional Cultures, Practices Support, Student to Succeed) does not adequately fit the observed data.

Table No. 7. Confirmatory Factor Analysis for Model Information Processing Scale of 40 items (n=205)

Sub-Variables	Items	Factor Loading	S.E.	C.R.	P
Defining	D1				***
	D2	0.657	0.045	14.507	***
	D3	0.737	0.031	23.589	***
	D4	0.828	0.032	25.968	***
	D5	1.000			
Locating	L1	1.293	0.094	13.745	***
	L2	1.297	0.101	12.789	***
	L3	0.301	0.059	5.092	***
	L4	0.788	0.072	10.964	***
	L5	0.544	0.064	8.499	***
	L6	1.091	0.080	13.634	***
	L7	0.604	0.056	10.809	***
	L8	0.924	0.070	13.125	***
	L9	1.000			
Selecting	S1	0.288	0.043	6.713	***
	S2	0.472	0.032	14.765	***
	S3	0.578	0.047	12.257	***
	S4	0.7220	0.027	26.574	***
	S5	0.763	0.041	18.419	***
	S6	0.828	0.044	18.842	***
	S7	0.666	0.037	18.231	***
	S8	0.693	0.045	15.503	***
	S9	0.627	0.025	24.892	***
	S10	0.687	0.046	14.955	***
	S11	1.000			
Organizing	O1	1.351	0.062	21.959	***
	O2	1.115	0.076	14.626	***
	O3	0.658	0.064	10.252	***
	O4	1.148	0.067	17.263	***
	O5	1.000			
Preparing	P1	0.554	0.056	9.946	***
	P2	0.573	0.032	18.064	***
	P3	1.095	0.048	22.636	***
	P4	0.712	0.042	16.859	***
	P5	1.000			
Assessing	A1	1.490	0.080	18.684	***
	A2	1.682	0.086	19.477	***
	A3	0.702	0.064	11.015	***
	A4	0.946	0.078	12.048	***
	A5	1.000			

The factor loadings, standard errors (S.E.), critical ratios (C.R.), and significance levels of items measuring six latent constructs; Defining, Locating, Selecting, Organizing, Preparing, and Assessing were examined using a Confirmatory Factor Analysis (CFA). Five items (D1–D5) were used to measure the concept Defining. The Defining construct is sufficiently represented by items

D2 through D4, which showed robust and statistically significant factor loadings. Nine items (L1–L9) made up the Locating construct, and the findings confirm its validity. Eleven items (S1–S11) were used to measure the Selecting construct. The observed indications of the Selecting construct provide a good representation of it. There were five pieces in the Organizing construct (O1–O5). The fixed value for item O5 was 1.000. The Organizing construct's satisfactory convergent validity is confirmed and Five items (P1–P5) were used to assess the Preparing construct, and the results show that the items measure the Preparing construct reliably. There is substantial evidence supporting the validity of the Assessing construct, which consists of five items (A1–A5). They had high critical ratios and significance levels ($p < .001$) and loaded heavily on their corresponding latent constructs. The findings show that all of the measurement model's constructs have strong convergent validity. All of the items were statistically significant and added to their constructs, even though some had relatively modest loadings (such as L3 and S1). As a result, the measurement model is deemed appropriate and appropriate for additional structural investigation. Therefore, Institutional Factor-sub-variable model were adequately fit the observed data.

7H₀: There is no significant relationship between the Institutional Factor construct and the Information Processing in Digital Learning construct.

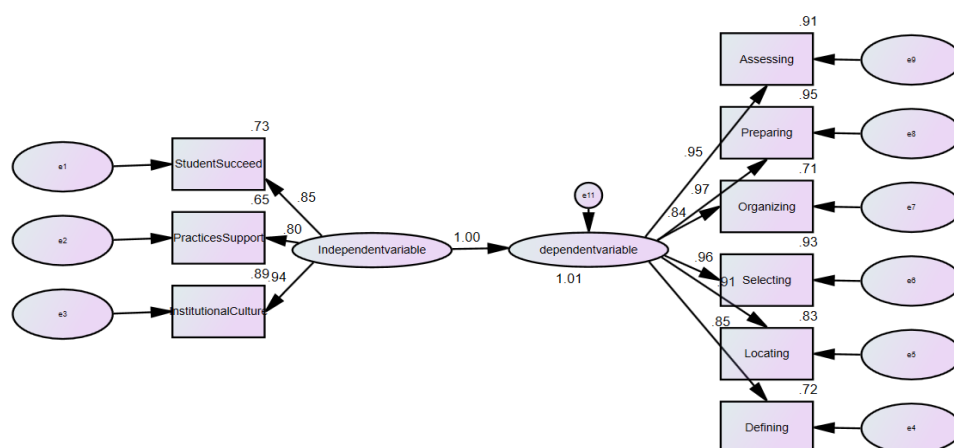


Figure No. 4 Regression Analyses of Conceptual Model of the Study

Table No. 8. Regression between the Institutional Factor construct and the Information Processing ($n=205$)

Independent Variable	Sub Variables	<i>R</i>	<i>R</i> ²	β	<i>Sig</i>
Dependent Variable Information Processing	Institutional Culture	0.927	0.859	0.859	0.000
	Practices Support	0.943	0.889	0.030	0.000
	Student Succeed	0.949	0.901	0.012	0.000
		0.946	0.896	0.896	0.000

According to the regression analysis's findings. A very strong positive association between the predictors and information processing was suggested by the model's high correlation coefficient. According to the coefficient of determination, the independent variables account for 89.6% of the variance in information processing. The model's statistical significance supports the regression model's suitability. Information processing is significantly predicted by institutional culture, according to the sub-variable. The link between Practices Support and Information Processing was significantly more robust. In a similar vein, Student Succeed demonstrated the strongest

association among the sub-variables, demonstrating its significance as a predictor. Therefore, the relationship between Institutional Factor and the Information Processing in Digital Learning construct were significantly positive.

Findings

It shows that there is a strong and positive correlation between the institutional factor and all of the sub-variables. The best predictor is shown to be institutional culture, which is followed by student achievement and practice support. The information processing is a highly developed skill among the participants, with each of the sub-variables having a significant and interconnected impact on this capacity. The extracted component accurately represents the variables IC, PS, and SS, with Component 1 being the most important contributor. The findings establish the measurement model's validity, validate the construct's single dimension, and show that the chosen variables consistently help to describe the underlying factor. Further analysis with multiple variables was warranted as the KMO and Bartlett's tests show that the data satisfied the requirements for factor analysis. Reliable and valid measurement was demonstrated by the statistically significant factor loadings for all domains, including Institutional Culture (IC1–IC9), Practices Support (PS1–PS3), and Student Success (SS1–SS7). These findings verify that each item significantly adds to the corresponding structures. The measuring model exhibits sufficient reliability and convergent validity with critical ratios above the lowest allowable value and extremely significant p-values, every observed variable loaded heavily on the corresponding latent constructs. Information processing is statistically significantly impacted by student success, practices support, and institutional culture. Information processing is positively impacted by institutional and support-related aspects, as seen by Student Succeeds best explanatory power among the sub-variables, which is closely followed by Practices Support and Institutional Culture.

Discussion

The focus of this study was to look into how teachers' success orientation, practice support, and institutional culture affect how the Information Processing Model (IPM) is applied in digital learning environments. The strongest predictor of information processing implementation, according to regression analysis (H7), is "Student Success," which reflects instructors' success orientation and the institutional emphasis on outcomes. Teachers who connect their efforts to observable success engage more deeply with IPM components (Defining, Locating, Selecting, Organizing, Preparing, Assessing), as evidenced by high correlation and significant beta weights. This suggests that outcome-oriented motivation drives cognitive effort in digital learning. Practices Support (PS), which gives educators the support, tools, and direction they require for digital learning, is a major force behind the adoption of IPM. PS is a unique institutional feature that lessens cognitive burden, allowing teachers to concentrate on information processing rather than overcoming administrative or technical difficulties, according to analyses (H1, H3, H5, H7). Even highly driven educators depend on PS to convert their own motivation into productive learning habits.

Furthermore, Institutional Culture (IC) is the cornerstone of the IPM ecosystem, as evidenced by the greatest factor loading (0.943) in EFA (H3). Effective information processing is made possible by a good culture that encourages digital innovation and open communication. The IPM's daily implementation is driven by Practices Support and Success Orientation, which operationalize the culture that sets the scene. The six basic competences of IPM are confirmed by CFA, and its application is high among respondents (Mean = 4.35). Individual digital literacy is highly dependent on the institutional environment, as demonstrated by regression analysis, which reveals

that institutional characteristics such as culture, support, and success orientation account for the majority of the variance. Lastly, IPM implementation is greatly influenced by institutional culture, practices support, and instructors' success orientation; the latter two drive day-to-day execution, while culture serves as the foundation. A comprehensive strategy that emphasizes teacher effectiveness, realistic resources, and a supportive culture is needed to improve digital learning results.

Conclusion

The foundation of teachers' IPM implementation is Institutional Culture (IC). Strong factor loadings (0.943) demonstrate that a culture that values digital innovation, teamwork, and open communication fosters the supportive environment required for efficient information processing. Practice Support (PS) is a crucial facilitator of IPM implementation, offering resources and guidance that alleviate cognitive burden and allow teachers to concentrate on information processing. Even the most motivated educators depend on PS to effectively engage with all stages of IPM, with regression analyses validating it as a significant predictor of successful application.

The Success Orientation of teachers, as evidenced by 'Student Success,' is the most significant predictor of IPM adoption, as outcome-driven motivation fosters more involvement with IPM procedures and guarantees that intrinsic motivation is converted into successful practice. Institutional culture, practice support, and teachers' success orientation jointly facilitate IPM acceptance, with culture serving as the foundation, support facilitating practice, and success orientation fostering engagement; enhancing all three is essential for optimizing digital learning results.

Recommendations

The Recommendations are suggested to improve the use of the Information Processing Model (IPM) in digital learning contexts. The fundamental setting required for efficient information processing, policymakers should first promote a positive institutional culture that prioritizes digital innovation, teamwork, and open communication. Second, in order to enable concentrated engagement with IPM stages, it is crucial to enhance practice support by giving teachers sufficient tools, scaffolding, and direction to lessen cognitive and administrative responsibilities. Third, by coordinating instructional efforts with observable student outcomes and supporting professional development programs that prioritize outcome-oriented teaching techniques, policy should support teachers' success orientation. Lastly, to optimize the efficacy of digital learning and guarantee long-term IPM adoption, a comprehensive policy strategy that incorporates cultural, operational, and motivational supports is advised.

Future research could examine (Higher order thinking) HOT variables that potentially impact digital learning outcomes in order to better understand the dynamics of IPM deployment. Researchers may look at how teachers' success orientation, practice support, and institutional culture affect long-term IPM participation. Studies that compare various educational levels or circumstances may shed light on how these elements function in various contexts. Additionally, including student viewpoints and learning objectives could improve knowledge of how IPM-guided teacher practices result in quantifiable educational improvements. Lastly, optimal practices for maximizing digital learning through IPM adoption may be identified and causal links established with the experimental or mixed-methods designs.

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