

Mapping Organizational Noise and Communication Reliability in a Mega Open University

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ABSTRACT: Open and distance learning (ODL) is delivered through institutional communication, yet the dependability of that communication is rarely studied as a property of the system. Research tends to treat platform usability, administrative service and language accessibility as separate concerns, so their combined effect on a single learner is seldom examined. This study specifies “organizational noise” as interference distributed across environmental, technological, cultural and linguistic domains to map communication reliability in a mega open university. A convergent mixed-methods design was implemented at Allama Iqbal Open University (AIOU), Pakistan, a distance-mode teaching institution enrolling more than one million students annually across 56 regional campuses. Survey data were collected from 480 undergraduate ODL students through stratified random sampling across three faculties, while six students, two from each faculty, participated in semi-structured interviews. Survey responses were summarised descriptively, interview data were analysed thematically, and findings were integrated at the interpretation stage. The findings indicate that students experienced official institutional communication as generally present but unevenly dependable. Notifications could be timely or delayed, platform usability ratings could be highly positive despite serious congestion during peak submission periods, parallel authentication systems could fail to grant access, digital access remained uneven between urban and rural students, and formal English created difficulties for students requesting clarification in simpler terms. These disruptions tended to accumulate rather than occur as individual technical failures. The study concludes that communication reliability in institutions of this scale is a condition of access rather than merely a service supporting it.

KEYWORDS: Organizational Noise, Communication Reliability, Open and Distance Learning, Institutional Communication, Digital Divide, Mega Universities

Introduction

Open and distance learning (ODL) is constituted by mediated communication. Without a shared campus, there is no corridor conversation, no noticeboard glanced at between classes, no classmate who mentions in passing that a deadline has moved. What a campus-based student absorbs ambiently, an ODL student must be told deliberately,

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accurately and on time. Institutional communication is therefore not an administrative support function in ODL; it is the medium through which teaching itself is delivered.

Two decades of digital consolidation have concentrated that burden onto a small number of institutional systems. Learning management systems, campus management portals, automated notifications, email correspondence and messaging applications now function as a single interdependent ecosystem rather than as discrete tools. Their combined dependability determines whether a student who is simultaneously employed, geographically remote and responsible for a household can establish what is required, by when, and through which channel.

Studies of the large-scale shift to remote provision during the COVID-19 pandemic sharpened this point. Reviews of that period converge on the finding that learning outcomes tracked the coherence of institutional provision, the stability of the platforms used to deliver it, the quality of learner support, and the intelligibility of communication as closely as they tracked any particular pedagogical design (Bozkurt et al., 2020; Hodges et al., 2020; Martin et al., 2020). Communication reliability, on this evidence, is a feature of institutional provision as a whole and warrants analysis at that level.

Communication Reliability and Student Persistence

A substantial literature links the quality of institutional communication to whether students continue their studies. Saba (2000), reviewing the state of distance education research, argued that the variables governing mediated provision behave as a dynamic system whose elements are interdependent rather than as separable attributes of course design. Park and Choi (2009) found that institutional support and communication were among the factors distinguishing adult learners who persisted from those who withdrew. Lee and Choi (2011), reviewing the dropout literature, identified clarity of institutional communication and reliability of institutional systems as recurrent correlates of withdrawal. Student support scholarship reaches a compatible conclusion from a different direction, Tait (2000) and Simpson (2018) establish that proactive, structured support is associated with retention and attainment, and that its absence is felt most acutely by learners entering with least institutional familiarity.

Taken together, these strands establish that communication is consequential. What they do not do is specify what makes it reliable.

The Gap: Dependability of the Channel

Research on mediated provision has examined instructional interaction, platform usability and administrative satisfaction in considerable depth, but largely in separate literatures. The administrative, technological, cultural and linguistic conditions under which any message reaches a learner at all tend to sit in the background of each. Because the cumulative effect on an individual learner is rarely assembled into a single account, an institution can perform acceptably on each measure taken alone while its students remain unable to establish reliably what is expected of them. A student may report that the platform is usable, that tutors are responsive and that regulations are reasonable, and still miss a deadline because the confirmation of an upload never arrived.

Organizational Noise as a Systems-Level Construct

That gap is addressed by specifying organizational noise as a composite construct. The term draws conceptually on Shannon & Weaver (1949/1998) treatment of noise as interference within a transmission channel but extends it in an important respect. In an institution, the interference is not confined to the signal path; it is distributed across four domains, each with its own mechanism.

Environmental noise comprises interference generated by administrative processes and physical access to services: delay in responding to student enquiries, dependence on the availability of particular members of staff, uncertainty about which office is responsible for a given matter, and the time and expense of travelling to a regional centre for business that might have been transacted remotely.

Technological noise comprises interference generated by the institution's communication and learning technologies: congestion during peak periods, services that are unavailable when needed, multiple and inconsistent systems for storing and authenticating student credentials, and inequality in students' access to devices and connections of sufficient quality to use those systems.

Cultural noise comprises interference generated by mismatch between institutional communication practice and the circumstances in which students actually live and work — their employment, age and location. The clearest instance is the assumption that every student can monitor institutional portals routinely, which is demonstrably untrue of a student body in which most are in employment.

Linguistic noise refers to the language of official communication (text) that the student cannot readily understand, insufficient command of the language (i.e. English) in which the institution corresponds with students, and inability to reply in the required register and in the necessary terminology.

Organizational noise is generally more destructive than signal degradation as it creates uncertainty regarding messages originating from within an organization. As a result, students who are unable to reliably predict messages' delivery time, accessibility, and content generally opt for alternative communication channels, e.g., classmates, course-related social media groups, or even interpersonal intermediaries that in turn pose additional risks of inaccuracy. However, of greatest significance to an organization is the fact that queries not submitted in the first place generate no records of any sort, thereby making it impossible for the same organization's systems designed to monitor for such failures to actually discover them in the first place.

In order to move beyond a simple connection versus non-connection framework for understanding digital access, a number of authors have noted that access can be best considered as multidimensional or in terms of various types or forms (van Dijk, 2020; Warschauer, 2003). These dimensions vary widely within a single national system, and digitally mediated provision tends to reproduce, and can amplify, existing stratification (Czerniewicz et al., 2020; Selwyn, 2021).

Therefore, this study examines how environmental, technological, cultural and linguistic interference combine to shape communication reliability in a mega open university. Two questions are addressed:

1. What environmental, technological, cultural and linguistic disruptions do ODL students report in their communication with the institution?
2. How, in students' accounts, do these disruptions shape the reliability of institutional communication?

The design is exploratory and descriptive. As organizational noise is specified as a composite construct, the aim was to establish its domains, document their reported prevalence, and examine how learners experience their accumulation.

Method

Research Design

A convergent mixed-methods design was employed, in which quantitative and qualitative strands were conducted concurrently, analysed independently and merged at the interpretation stage (Creswell & Plano Clark, 2018). The

quantitative strand established the reported prevalence of disruption across the four noise domains. The qualitative strand serves an expansion function, making visible the sequencing and mechanisms behind response patterns that frequency distributions cannot show (Greene et al., 1989). Priority is quantitative-dominant in scope and qualitative-supportive in explanatory function.

Research Context

The study was conducted at Allama Iqbal Open University (AIOU), Islamabad. Established in 1974, AIOU is Pakistan's national open university and was the first institution of its type in Asia and the second in the world. It is a distance teaching institution operating at mega-university scale, with annual enrolment exceeding one million students, a majority of whom are women and a substantial majority of whom are in employment. Provision is administered through a network of 44 regional campuses and centres distributed across the country, and there is no upper age limit for admission (Allama Iqbal Open University, n.d.).

Delivery combines several channels. Printed self-instructional course materials are dispatched to enrolled students; tutor-marked assignments are submitted for formative feedback; workshops are held at regional study centres and, increasingly, online; the AAGHI learning management system carries course resources, assignment submission and virtual workshops; and a separate Campus Management System (CMS) handles admission, enrolment, fee and result functions. Academic provision runs on two semesters, Spring and Autumn. Two features of this architecture bear directly on analysis: the LMS and the CMS are distinct systems requiring separate credentials, and administrative resolution is distributed between the central campus and the regional network.

This context is reported in detail because it carries the transferability argument. Very large-scale dispersed regional administration, dual print-and-digital delivery, parallel institutional platforms, a predominantly employed student body and marked urban–rural infrastructure variation are shared by many mega open universities in South and Southeast Asia and in sub-Saharan Africa, and findings of this research may transfer most readily to institutions of that profile. Readers in smaller, single-platform, predominantly urban or dual-mode institutions may weight them accordingly, since several of the disruptions documented in the study are functions of scale and geographic dispersion rather than of distance provision as such.

Population, Sampling and Response

The target population comprised students enrolled in undergraduate programmes delivered in ODL mode at AIOU. A stratified random sample of 480 students was drawn, using faculty of enrolment as the stratification variable, with the three faculties offering undergraduate ODL programmes forming the strata: Education, Social Sciences, and Arabic. Stratification was adopted to secure representation across programme types and learner profiles rather than to support between-faculty comparison.

Questionnaires were distributed to 480 students during online workshops, of whom 400 returned usable responses, a response rate of 83%. Stratum sizes, sampling fractions, achieved counts and stratum-level response rates are reported in the tables.

Interview Participants

Six students, two from each faculty stratum, took part in semi-structured interviews. The participants were selected purposively from survey respondents who had indicated willingness to be contacted, seeking maximum variation across faculties. Interviews lasted approximately 45 minutes and were conducted face-to-face at the main campus in bilingual mode, English and Urdu; extracts originally spoken in Urdu are presented in translation. All interviews

were audio-recorded and transcribed verbatim. The interview protocol was developed after preliminary inspection of the survey response patterns, so that probes addressed the domains in which disruption was most frequently reported.

The qualitative component was illustrative rather than representative and is reported throughout as such. The study does not claim thematic saturation as only six students were interviewed and these accounts are not offered as evidence of prevalence. Their function in the design is expansion to show how disruptions unfold and compound in particular circumstances, which the survey establishes as common but cannot explain (Fetters et al., 2013). Quotations may accordingly be read as instances of a pattern whose frequency is estimated by the survey, not as independent evidence of that frequency.

Instrumentation

Quantitative data were collected using a structured questionnaire developed for this study, comprising four subscales corresponding to the environmental, technological, cultural and linguistic domains of organizational noise: 10 items for environmental noise, 13 each for technological and cultural noise and 14 for linguistic noise, giving 50 items in total. Each item is a statement about the frequency of a specified communication event, rated on a five-point frequency scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always).

The instrument records reported frequency rather than satisfaction or attitude, and this distinction matters for interpretation. A high reported frequency of interruption does not by itself indicate dissatisfaction, and in these data a favourable assessment of the LMS coexists with frequent reports of interrupted access to it.

Validity, Internal Consistency and Trustworthiness

Content validity was established through expert review. Six specialists in communication and distance education evaluated each item for relevance to its intended domain, clarity of wording and adequacy of construct coverage.

Internal consistency for the full scale was acceptable, with Cronbach's $\alpha = .893$. Because the four domains are treated as conceptually distinct rather than as indicators of a single dimension, the subscale coefficients are reported: environmental .634, technological .830, cultural .691, linguistic .741. Two of these falls below the conventional .70 threshold, and the environmental subscale in particular should be regarded as provisional; therefore, the environmental and cultural results are interpreted at item level rather than as composite scores. Internal consistency evidence reliability of measurement, not dimensional structure. The four-factor structure assumed has not been established factor-analytically and is treated in this study as a conceptual rather than a psychometric partition.

For the qualitative strand, transcripts were analysed following Braun and Clarke's (2006) six-phase approach to reflexive thematic analysis. The themes were retained where they were evidenced across more than one participant and were interpretable against the survey response patterns.

Ethical Considerations

Ethical approval was granted by the Office of Research, Innovation and Commercialization (ORIC), AIOU. Participation was voluntary in both strands. Participants were informed of the purpose of the study, of their right to decline or withdraw without consequence for their studies, and of how their data would be stored and reported, and all provided written informed consent. Survey data are reported only in aggregate. Interview extracts are presented without personally identifying information, and details that could identify a participant's regional centre or programme cohort have been withheld.

Analytic Strategy

Survey responses were summarised using frequencies and percentages for each item across the five response categories. No inferential modelling was undertaken, and none is reported. The study was designed to establish what students report rather than to estimate relationships among latent variables. Interview transcripts were analysed thematically. Integration followed a convergent logic: the two strands were analysed independently and then compared through a joint display in which survey response patterns and interview themes were examined for convergence, expansion and dissonance (Fetters et al., 2013). Where the strands diverged- most notably in the coexistence of favourable LMS usability ratings with detailed accounts of access failure- the divergence is reported rather than reconciled, for it was analytically informative.

Findings

Survey Findings

Tables 1 to 4 report the distribution of student responses across the four noise domains. Percentages are of valid responses within each item (n = 400).

Table 1

Environmental Noise Reported by Students

Sr.	Statement	n	Never	Rarely	Sometimes	Often	Always
1.	I usually receive updates from AIOU on time.	400 100%	14 3.5%	47 11.8%	69 17.3%	65 16.3%	205 51.3%
2.	I face delays in getting important information from AIOU.	400 100%	132 33.0%	86 21.5%	108 27.0%	41 10.3%	33 8.3%
3.	I find it difficult to contact the right person to solve my issues.	400 100%	123 30.8%	70 17.5%	113 28.3%	54 13.5%	40 10.0%
4.	I can get useful help from my nearest AIOU regional office.	400 100%	59 14.8%	50 12.5%	74 18.5%	55 13.8%	162 40.5%
5.	I feel disconnected from AIOU because there is not enough communication.	400 100%	182 45.5%	84 21.0%	67 16.8%	42 10.5%	25 6.3%
6.	AIOU follows up when student reports a problem.	400 100%	35 8.8%	66 16.5%	80 20.0%	73 18.3%	146 36.5%
7.	I need to rely on my classmates for correct information.	400 100%	71 17.8%	76 19.0%	118 29.5%	63 15.8%	72 18.0%
8.	I need to rely on social media for correct information.	400 100%	53 13.3%	82 20.5%	122 30.5%	60 15.0%	83 20.8%
9.	I sometimes receive conflicting information from different departments.	400 100%	167 41.8%	82 20.5%	72 18.0%	44 11.0%	35 8.8%
10.	I feel included in AIOU2019s communication system as a distance learner.	400 100%	51 12.8%	67 16.8%	93 23.3%	68 17.0%	121 30.3%

Environmental noise (Table 1) presents a mixed profile. Two-thirds of students reported receiving institutional updates on time at least often (67.6%), and 54.8% reported that the institution follows up at least often when a student reports a problem. Against this, 45.6% reported delay in obtaining important information at least

sometimes, 51.8% reported difficulty contacting the right person to resolve an issue, and reliance on informal sources was widespread: 63.3% turned to classmates and 66.3% to social media for information they regarded as accurate, at least sometimes. The pattern is not one of absent communication but of communication whose dependability varies with the type of issue and the student's circumstances.

Table 2*Technological Noise Reported by Students*

Sr.	Statement	n	Never	Rarely	Sometimes	Often	Always
1.	AIOU2019s LMS works smoothly for my study needs.	400 100%	13 3.3%	57 14.3%	57 14.3%	78 19.5%	195 48.8%
2.	I face technical issues that stop me from submitting my work.	400 100%	89 22.3%	70 17.5%	149 37.3%	70 17.5%	22 5.5%
3.	I find the AIOU website user friendly.	400 100%	20 5.0%	47 11.8%	84 21.0%	81 20.3%	168 42.0%
4.	I find the AIOU LMS easy to use.	400 100%	11 2.8%	54 13.5%	50 12.5%	60 15.0%	225 56.3%
5.	It 2019s easy for me to access course materials online.	400 100%	9 2.3%	53 13.3%	65 16.3%	68 17.0%	205 51.3%
6.	My internet connectivity makes it hard for me to stay tuned with AIOU updates.	400 100%	78 19.5%	81 20.3%	122 30.5%	67 16.8%	52 13.0%
7.	AIOU2019s website is too slow when needed.	400 100%	90 22.5%	76 19.0%	138 34.5%	62 15.5%	34 8.5%
8.	The online system clearly shows my academic progress.	400 100%	19 4.8%	45 11.3%	60 15.0%	75 18.8%	201 50.3%
9.	The online system clearly shows deadlines.	400 100%	21 5.3%	53 13.3%	63 15.8%	76 19.0%	187 46.8%
10.	Sometimes AIOU2019s website is unavailable when needed.	400 100%	102 25.5%	80 20.0%	132 33.0%	58 14.5%	28 7.0%
11.	AIOU gives clear instructions on how to use online tools.	400 100%	18 4.5%	41 10.3%	80 20.0%	75 18.8%	186 46.5%
12.	I receive confirmation after I submit work on LMS.	400 100%	38 9.5%	46 11.5%	59 14.8%	70 17.5%	187 46.8%
13.	AIOU2019s digital systems support my learning well.	400 100%	13 3.3%	57 14.3%	65 16.3%	67 16.8%	198 49.5%

Table 2 presents data in relation to technological noise as distinct from organizational noise. Although findings presented in this table are generally positive in relation to the usability of the LMS (as indicated by the high ratings in relation to ease of use), and excellent in terms of access to course materials online (again with high ratings), technical problems were experienced by students in 60.3% of instances when trying to submit work. In addition, 58.5% of students found the institution's website too slow on occasions when they needed to access it. In terms of availability, 54.5% of students reported that the website was unavailable on occasions when they needed to use it. Finally, 60.3% of students noted that their own connection problems had, at times, made it difficult for them to keep up with updates from the institution. These findings indicate that, from a technological noise perspective,

problems with the system are related to its availability under load rather than with the design of the interface to the system.

Table 3

Cultural Noise Reported by Students

Sr.	Statement	n	Never	Rarely	Sometimes	Often	Always
1.	The staff at AIOU respect students.	400	17	49	44	64	226
		100%	4.3%	12.3%	11.0%	16.0%	56.5%
2.	The staff at AIOU supports the students when needed.	400	17	47	56	63	217
		100%	4.3%	11.8%	14.0%	15.8%	54.3%
3.	The teachers at AIOU support the students in times of need.	400	20	47	64	66	203
		100%	5.0%	11.8%	16.0%	16.5%	50.8%
4.	I hesitate to contact AIOU2019s staff because I feel they may not cooperate.	400	156	64	94	49	37
		100%	39.0%	16.0%	23.5%	12.3%	9.3%
5.	The opinions of students are considered at AIOU.	400	31	53	98	79	139
		100%	7.8%	13.3%	24.5%	19.8%	34.8%
6.	The needs of the students from remote areas are not catered by AIOU.	400	95	81	106	79	39
		100%	23.8%	20.3%	26.5%	19.8%	9.8%
7.	AIOU2019s communication system is more suitable for urban students.	400	30	58	63	101	148
		100%	7.5%	14.5%	15.8%	25.3%	37.0%
8.	As a student I am encouraged to take part in online discussions.	400	28	42	78	85	167
		100%	7.0%	10.5%	19.5%	21.3%	41.8%
9.	AIOU2019s staff seems unconcerned, which makes communication difficult.	400	128	78	101	49	44
		100%	32.0%	19.5%	25.3%	12.3%	11.0%
10.	I feel included in AIOU activities, regardless of my background.	400	39	69	84	89	119
		100%	9.8%	17.3%	21.0%	22.3%	29.8%
11.	Students from different areas receive different levels of support.	400	63	60	77	74	126
		100%	15.8%	15.0%	19.3%	18.5%	31.5%
12.	It is difficult to raise concerns to the authorities at AIOU.	400	96	73	105	76	50
		100%	24.0%	18.3%	26.3%	19.0%	12.5%
13.	It is difficult to file complaints to the authorities at AIOU.	400	112	78	94	63	53
		100%	28.0%	19.5%	23.5%	15.8%	13.3%

Cultural noise (Table 3) shows a comparable bifurcation. Interpersonal conduct is rated highly: 72.5% reported that staff respects students at least often and 70.1% that staff provides support when needed. Judgements about the distribution of that support are less favourable. A clear majority, 62.3%, reported at least often that the communication system is better suited to urban students, 56.1% reported at least sometimes that the needs of students in remote areas are not met, and 50.0% reported that students in different areas receive different levels of support at least often. Procedural items attract the least favourable responses: 57.8% found it difficult to raise concerns with the authorities at least sometimes, and 52.6% found it difficult to file a complaint. The availability of a grievance channel and its usability are evidently experienced as different things.

Table 4*Linguistic Noise Reported by Students*

Sr.	Statement	n	Never	Rarely	Sometimes	Often	Always
1.	I understand most of the instructions given on AIOU2019s LMS.	400 100%	14 3.5%	53 13.3%	55 13.8%	60 15.0%	218 54.5%
2.	I find the wording of official messages too difficult.	400 100%	147 36.8%	83 20.8%	78 19.5%	50 12.5%	42 10.5%
3.	I understand most of the instructions given on AIOU2019s website.	400 100%	11 2.8%	50 12.5%	70 17.5%	62 15.5%	207 51.8%
4.	LMS postal messages are too short.	400 100%	104 26.0%	78 19.5%	99 24.8%	54 13.5%	65 16.3%
5.	LMS postal messages are unclear.	400 100%	208 52.0%	68 17.0%	62 15.5%	39 9.8%	23 5.8%
6.	I feel comfortable reading AIOU2019s instructions in Urdu.	400 100%	66 16.5%	52 13.0%	82 20.5%	43 10.8%	157 39.3%
7.	I feel comfortable reading instructions in English.	400 100%	30 7.5%	51 12.8%	64 16.0%	66 16.5%	189 47.3%
8.	I miss important points because the language is too formal.	400 100%	188 47.0%	72 18.0%	71 17.8%	43 10.8%	26 6.5%
9.	AIOU2019s communication includes examples that help explain things.	400 100%	27 6.8%	55 13.8%	83 20.8%	70 17.5%	165 41.3%
10.	I need extra help from others to understand official messages from AIOU.	400 100%	138 34.5%	66 16.5%	77 19.3%	54 13.5%	65 16.3%
11.	AIOU provides guidance to help students understand better.	400 100%	21 5.3%	42 10.5%	68 17.0%	76 19.0%	193 48.3%
12.	I feel hesitant to ask questions because of the language barrier.	400 100%	192 48.0%	63 15.8%	72 18.0%	34 8.5%	39 9.8%
13.	I am unable to give my viewpoint because of the language barrier.	400 100%	199 49.8%	60 15.0%	58 14.5%	43 10.8%	40 10.0%
14.	I face discrimination because of my language.	400 100%	211 52.8%	63 15.8%	64 16.0%	28 7.0%	34 8.5%

Linguistic noise (Table 4) is the least widely reported domain. Comprehension is generally good: 69.5% understood most LMS instructions at least often, and 67.3% understood most website instructions. Reported barriers are real but confined to a minority: 42.5% found the wording of official messages too difficult at least sometimes, 49.1% needed help from others to understand official messages, 36.3% reported hesitancy in asking questions because of language, and 35.3% reported being unable to give their viewpoint for the same reason. Language-based discrimination was reported at least sometimes by 31.5%, with 52.8% reporting it never. Notably, students reported greater comfort reading institutional instructions in English (63.8% at least often) than in Urdu (50.1%), while 16.5% reported never being comfortable reading them in Urdu, a reminder that language preference in this population is neither uniform nor predictable from national context.

Interview Findings

Thematic analysis of the accounts of the surveyed issues led to the definition of four themes related to the four domains of noise. The accounts are presented below in order to explain the mechanisms behind the corresponding survey results, and not the frequency of their occurrence.

Environmental Noise: Administrative Dependency and the Cost of Access

Participants' accounts or assessment related queries are described within this theme. In several of the accounts, the matter is described as having been resolved by a particular individual and that the participant had to wait for this person to be available. Sometimes this individual was not available at all. There was no alternative provided to the participants in these accounts. Participants were often left unsure of when the matter would be dealt with.

"There was no one who could assist students when the regional staff member was absent. We just had to wait."

In addition to time and effort, learners described the additional costs of traveling to the main campus or regional centers. Some reported difficulties in establishing their status as enrolled students at the reception and encountering lengthy waiting times to access the limited facilities that were available to them while waiting to be seen. Some suggested that the hours of the campus libraries be extended in order to assist the working students, who would be able to study at the library outside of the standard office hours.

The preceding accounts clarify that from the learner's perspective, administering the institution is contingent upon individual staff members being available to assist learners. Thus, from a learner perspective, the absence of individual staff members equates to the absence of provision from the institution and combined time, and travel costs form a financial threshold which individual matters must exceed in order for the inquiries to be lodged with the institution.

Technological Noise: Congestion, Credentials and Uneven Access

The system experienced multiple network breakdowns which mainly affected the transmission of audio streams.

"The connectivity was also a significant issue because the teacher's voice used to break, and everyone in the chat was repeating the phrase, 'Sir, no voice, no voice!'"

Congestion was described as concentrated at submission deadlines, when the opportunity to recover was smallest:

"When I tried uploading my assignment towards the deadline, the site was congested and was not accessible. I couldn't submit it on time."

The login process for two different systems, which both are part of the learners' environment, is confusing in itself and often leads to problems accessing information and services:

"There were two passwords to be remembered, CMS and LMS password, and I could find myself with an old password that was not working."

Remedial guidance has been posted on the LMS, but participants described it as unevenly effective across the age range of the student body.

"They had posted YouTube demonstration videos on LMS. It was simple for us young learners to understand but harder for those who are older."

Rural participants described how mobile network “cutting out” and low bandwidth stopped them from uploading work on time. The accounts also varied widely when it came to participants’ technology. The same message, sent by the institution, was read by learners under vastly different technical circumstances. The accounts of failure gave a sense of where that failure was worst- last minute, when there was least margin for error.

Cultural Noise: Occupational Time and Channel Substitution

For those with employment, it is very difficult to log in to the LMS within their working hours to check for messages; therefore, they rely on classmates and other students and even messaging applications such as WhatsApp to get updates on time.

"We do not find time to check the messages on LMS because we are too occupied with jobs, so we are more dependent on WhatsApp for updates."

However, the information they receive from classmates via messaging apps can be incomplete, old, or even wrong. It is the learners with the least time to verify information that are most affected by such information. The Institute is removed from the scenario, and any errors propagated by such means are not known by the Institute.

Some teachers conducted their lessons irregularly, and participants described sessions beginning later than the scheduled time.

"Teachers used to be late on certain occasions, when the lesson was at 8:20 pm, the lesson commenced at 8:50 pm due to time management factors."

"Some teachers do not sound professional, like they were at home and not in class."

The account provided here therefore focuses on the variability in time management practiced by resource persons and the kind of mannerism expected by students in online sessions. What is most important to students attending online sessions after work during evening hours is that sessions are held on time and that due attention is given in lessons conducted.

Linguistic Noise: Register and the Cost of Asking

Official messages can generally be read by students, but there are occasions when the language is far too formal or technical.

"The messages were generally easy to understand, but the language is too formal or technical at times."

An additional point made by one of the urban-based participants was his own struggles with the study materials provided for his courses. The following excerpt illustrates this and provides a basis of comparison with a rural-based student.

"Books are written in such difficult English that even I cannot get them. Imagine a student from rural area!"

A number of participants recalled earlier television and recorded provision as more accessible than text alone and favoured plain-language guidance delivered through more than one medium. One participant recalled that he had not asked for help on the LMS because he could not put the question in a sufficient form of English.

It becomes clear that students often are afraid to ask for explanations regarding unclear messages, because they are not sure whether they use the right language to ask their questions. Moreover, even if students manage to write a question regarding unclear messages, they lack the confidence to submit it; thus, the question that is not submitted has no value for the institution.

Discussion

The findings are discussed below against the four domains of organizational noise and the literature reviewed above. Communication failure at this institution was not confined to any single channel, and each domain produced a distinct pattern.

Environmental Noise: Process Dependability and Inferred Rigidity

The data surveyed in environmental noise indicated that the majority of students described the institution's formal channels as delivering requisite information on time, and that the institution follows up when a problem or concern is reported. About half of the participants described themselves as included in the institution's communication system as distance learners, and only a minority described themselves as disconnected from it for want of communication.

The dependability of processes would, however, vary depending upon the type of query or issue for which assistance was required and the staff member who was supposed to deal with such queries and issues. More than half of students reported problems contacting the staff member who could assist with issues, and more than a third of students reported that on occasions they were provided with inconsistent information by different departments dealing with similar matters. In some cases, the same staff member dealt with matters on behalf of different departments and as indicated above, resolution of the matter would depend on the availability of that particular staff member, and the student would not know an alternative route for seeking assistance.

Process dependability is read by students from the behaviour of the institution's processes rather than from the provisions of its rules, and the two may diverge considerably. A student waiting several days because one officer is absent draws inference that the institution is inflexible. Perceived rigidity of this kind is therefore an effect of how processes behave, and it persists whatever the formal rules permit.

One important insight of Saba (2000) on distance provision is that all variables influencing it interdependently and thus cannot be designed in isolation from each other. Building on this, the present study identifies reachability as an antecedent of responsiveness. If reachability depends on chance rather than on well-defined processes, then learners turn to each other and to alternative channels such as social media to obtain correct information. The items concerned measure compulsion rather than preference, and the distinction matters: students turned to informal channels not because those channels were judged more accurate, but because they were more predictably available. Informal communication within learner communities is a feature of distance provision generally, but its compulsory use is a different matter from its optional use, and the literature on digitally mediated inequality indicates that the burden of such compulsion falls unevenly (Czerniewicz et al., 2020; Selwyn, 2021; van Dijk, 2020; Warschauer, 2003).

Technological Noise: Usability without Availability

Usability and availability are distinct properties of an institutional system, and the survey separated them. The official institutional channels were rated favourably by the majority of participants for ease of use and for the clarity of the information they display, and the majority also reported that updates are sent on time and that they are included in the communication system of the institution as distance learners. However, the same participants reported a number of instances of interrupted access (technical problems, page loading, slow performance, offline institutional pages), and a majority reported technical difficulty preventing the submission of work for assessment.

Measuring usability of distance learning systems has become a common practice but is often limited to evaluation of information provided. However, from the system's point of view, information provided does not necessarily mean that the system is available when needed. The two properties are independent and therefore need to be measured

separately. For instance, a system may display a deadline very clearly but is not available at the time of the submission of the assignment. The system's usability has been designed, but its availability at peak times has not. The students' interviews described the above situations of congestion of loads at submission of assignments, exams, and publication of results, as well as audio difficulties in online synchronous sessions; although the sessions continued to be held, they were not very productive because of major loss of information.

The timing of provision of educational services over the Internet matters. Peak loads tend to occur at specific times such as assignment deadlines, exams, and publication of results. Thus, system failures are most critical when students need the system the most. The systems for support of students at a distance are part of the larger system of higher education and, as such, persistence literature suggests that perceptions of institutional responsiveness are key to students' decisions to continue their studies (Lee & Choi, 2011; Park & Choi, 2009). Thus, the level of availability of support systems is crucial to the institution's efforts to maintain its students. Students' evaluations of provision of educational services online are closely related to their assessments of the system's dependability (Al-Azawei et al., 2016). Consequently, measures of coherence and stability of provision of educational services at a distance are as important as pedagogic design (Bozkurt et al., 2020; Hodges et al., 2020; Martin et al., 2020).

Cultural Noise: The Unequal Distribution of Communicative Burden

Learners with different amounts of time and different qualities of connection do not meet remote provision on an equal footing. The working student does not have time to constantly check the university's portal(s), while the student living in a rural area with inadequate internet connection often has to work around the times when he or she has managed to download the information he or she needs.

The students recognized the above-mentioned unevenness. A majority of them agreed that the communication system was more suitable for urban students. Half of the students also agreed that students from different areas received different types of support, and a majority reported that the needs of students from remote areas were not met. This meant that, even if a distance learning student managed to become self-reliant, the system would transfer the burden of necessary effort to him or her.

The negative aspects of interacting with the university are mostly related to procedure and not to the manner in which staff treats students. The means by which learners can approach staff to report problems with academic matters, submit queries and even submit complaints attracted markedly less favourable responses, even though the means by which learners can lodge grievance are available to students. Hence, in terms of usability of a channel of support to report problems with academic matters or for submitted work, formal communication channels are not very useful to many students.

The major contribution of this research pertains to the procedural dimension or mechanisms that generate and perpetuate inequalities within an institutional communication system. What Czerniewicz et al. (2020) and Selwyn (2021) mentioned about digitally mediated distance learning generating inequalities, and what van Dijk (2020) and Warschauer (2003) identified that access goes beyond connectivity, this research explains how those inequalities are generated and perpetuated within the communication system of a distance teaching university. The design of the communication system makes an assumption about the learner who checks the portals of the university routinely and holds an adequate connection during peak times. The study identifies how the design fails a large proportion of students at the university and how formal availability of channels is not translated into effective participation by students who need to access information through those channels.

Linguistic Noise: Register and the Suppression of Help-seeking

On one hand, the majority of participants were able to understand formal language used by an institution in online environments. However, many of them hesitated or felt reluctant to ask for clarification when they felt uncertain about the meaning of online messages. Importantly, these two findings are connected in an important way. In order to complete online tasks and to participate in online environments, students need not only to understand online messages but also to be able to respond to them. Students must therefore be able to write in the formal register the institution uses. This is the mechanism of linguistic noise in online environments identified in the present study.

Queries that are never sent cannot be logged by systems designed to monitor the support needs of students. Hence, linguistic noise is largely invisible within current support systems. However, the magnitude of this domain within the present data is modest. Furthermore, students reported greater comfort in reading institutional instructions in English than in Urdu. Thus, problems with academic language in higher education are more complex than a simple choice between two languages and can be better described in terms of the gatekeeping function of academic language in medium-of-instruction environments (van Dijk, 2020; Warschauer, 2003).

What the Four Domains Amount to?

Looking at the four domains that emerged from the students' views of the communication systems of the Open University, the major property of the distance learning institution studied here is the reliability of informing its students. Three major features of this property of the distance learning institution studied in this research can be deduced from the data above.

First, when the overall learner experience is studied, the weakest link will determine the overall experience. Thus, whilst increasing the capacity of a platform may improve aspects of the learner experience, if the related administrative processes are not also addressed, little will be gained, and neither measure addresses a register that deters students from asking for help in the first place.

Second, the student experience of these systems is not simply the sum of their individual parts. The effect of a number of problems with the portal does not simply add up. Rather, they tend to occur in a sequence of events that is damaging for the student. Thus, for example, it is not just that the portal is from time to time congested, that the student needs to log in with a number of different credentials, and that at critical times the student is unable to contact the officials. Rather, it is that these all tend to happen at the worst possible time, during a peak period of submission of work by students for a deadline.

Third, failure to use the institution's usual communication channels is currently hidden from the institution. It is only when a student escalates to submit a complaint or use a helpdesk that the communication failure is recorded by the system. This means that the normal measures for monitoring student support (complaints, helpdesk logs) systematically underestimate the problem of communication failure experienced by distant students.

By identifying these four domains, the present study connects the findings from research on student support in higher education (Simpson, 2018; Tait, 2000) with studies on inequality in digital environments (van Dijk, 2020; Warschauer, 2003). These two areas of research have up until now been largely dispersed over different fields of study.

Implications for Practice

First, authentication should be consolidated across the LMS and the CMS. This failure mode was identified directly by students and lies wholly within the control of the institution. Second, sufficient platform capacity should be provisioned for peak load times (assignments, exams, results publications), and the learner should be explicitly informed when a submission has been successfully completed. Third, students should know what to expect from an

escalated problem report. The current practice of contingent processes, which are dependent on individual employees, should be replaced by clearly defined procedures that are published online. Finally, all departments should reconcile their guidelines and make sure that they are consistent, since a substantial minority of students encounter inconsistencies in the information provided by different departments.

Routine official communication should be issued in plain language, with equivalent versions in other languages and in alternative formats such as video where these are required. Accessibility had been designed for and ensured in earlier broadcast and recorded study materials, so this is not a novel capability for the institution. Digital literacy provision differentiated by age and by prior computer experience would address the unevenness that participants themselves identified in existing teaching materials. Opening hours at regional centres and libraries should be extended beyond normal office hours to match the availability of employed students.

A single design principle underpins these suggestions, and it is the one Tait (2000) and Simpson (2018) advance in respect of student services in open and distance learning. In mega open universities, communication with students is a component of teaching rather than an auxiliary service supporting it, and it warrants the monitoring, resourcing and quality assurance ordinarily accorded to instruction itself.

Limitations

Four limitations bear on the interpretation of these findings.

1. The instrument is newly developed, and the content validity was established through expert review, and full-scale internal consistency was acceptable, but the four-factor structure has not been confirmed factor-analytically, two subscale coefficients fall below the conventional threshold, and convergent and discriminant validity against related constructs have not been established.
2. All data are self-reported and cross-sectional; the reported frequency of disruption may therefore be influenced by recency and by the salience of adverse events, and no institutional system logs, service records or helpdesk data were obtained against which to corroborate student accounts. Cross-sectional data also cannot capture the temporal dynamics — accumulation across a semester, concentration at load peaks—that this account emphasises.
3. The qualitative strand comprises six participants and is illustrative only. It supports claims about mechanism, but none about distribution, and different participants might have surfaced different mechanisms.
4. The study was situated in a single institution and a single national context. The contextual account given in the Method is intended to support readers' own transferability judgements. The findings should not be generalised to ODL provision at smaller scale, with unified platforms, or in settings without comparable urban–rural infrastructure disparity.

Directions for Further Research

Three lines of work would strengthen the evidence base. Psychometric validation of the instrument, i.e., exploratory factor analysis on one sub-sample and confirmatory analysis on an independent sub-sample, would establish whether the four domains are empirically as well as conceptually separable and would allow the weaker subscales to be revised.

Triangulation of self-report against institutional system data, including platform uptime, helpdesk volumes and resolution times, and submission timestamps relative to deadlines, would test whether reported disruption tracks recorded disruption and would address the self-concealment problem identified in the study.

Finally, a multi-wave design across a semester, anchored to identified load peaks, would capture the accumulation that participants described but that cross-sectional data cannot demonstrate.

Conclusion

The study mapped communication reliability in a mega open university and found disruption distributed across environmental, technological, cultural and linguistic domains rather than concentrated in any one of them. Students reported official channels as functional but unevenly dependable: notification coexisted with delay, usable platforms with congestion at the moments of greatest consequence, courteous treatment with unequal access to support, and general comprehension with reluctance to seek clarification. What emerges is not a catalogue of faults but a pattern in which small failures across separate systems accumulate into uncertainty about whether the institution can be relied upon to inform its students.

Organizational noise is specified here as a systems-level construct. The study documents its four domains in a large ODL population and identifies three properties: weakest-link dependency, accumulation across domains, and self-concealment, that distinguish it from the isolated technical faults with which it is easily confused.

For institutions serving learners who are dispersed, employed, and unevenly connected, the reliability of communication is a condition of access rather than a service supporting it, and it should be resourced and monitored on that understanding.

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