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Detecting Experience Debt in Internal IT Services: A Minimal Touchpoint-Based XLA for Small EdTech Startups

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Abstract. Small EdTech startups often use SLA numbers to check whether internal IT services are working well. The problem is that these numbers usually show only whether the service was restored and how long it took. They do not show what users actually experienced while the problem was happening. This study looks at that hidden part. It uses the idea of experience debt to describe small but repeated service problems that slowly make daily work harder. The study was conducted in three small EdTech startups in Jakarta. It used survey data and interview data collected in the same period. The survey produced 274 valid responses across six touchpoints and five experience dimensions. The interviews involved 18 informants and focused on the service moments they remembered as most difficult. The weakest point appeared at TP2, where users faced access problems and often felt confused about what was happening, what to do next, and whether the issue was really finished. At TP4 and TP5, the main problem was fairness. Users often felt stuck in a process they could not see, had to repeat the same explanation, or did not know who was handling their request. From these findings, the study developed a simple touchpoint-based XLA as a one-page review tool. Its purpose is to help small teams notice user experience problems that normal SLA monitoring often misses. More research is still needed in other service settings and organisations.

Keywords: Internal IT Service Experience, Touchpoint-Based XLA, Service Recovery, Experience Measurement, Touchpoint Prioritization

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1. INTRODUCTION

In small EdTech startups, internal IT services are usually only really felt when something goes wrong. Nobody notices the login page until it stops working. Nobody thinks about account permissions until a new hire sits idle for half a day waiting for access. Nobody questions the support channel until a request disappears into it with no reply. Once any of these things happen, the disruption is immediate: tasks pile up, coordination slows down, and the rhythm people depend on to get work done just falls apart. This is what makes digital leadership so important in these kinds of environments, because the difference between technology that genuinely supports people and technology that gets in their way is often decided at the small, unglamorous level of daily service delivery, not at the level of big strategy [1]. In hybrid work settings where the same platforms and tools are used continuously, this becomes even more visible. Experience is shaped gradually through repeated use, and every friction point leaves a small mark that does not always show up on any dashboard [2], [3].

What makes this harder to address is that technology does not just slow work down when it fails. It also drains people in ways that are less obvious. Research has consistently shown that repeated small interruptions from digital services; a verification loop, a login that behaves unpredictably, a support request that produces silence; can build into real fatigue and overwhelm, especially for people working in hybrid or remote arrangements [4], [5], [6], [7]. The experience of work does not come only from what tools are available, but from how communication moves through those tools and whether the environment actually fits the way someone needs to work on a given day [8], [9]. Two people can use the exact same system in the same week and walk away with completely different feelings about it. Technostress research adds another layer to this picture; leaders can either make these pressures lighter or heavier, and in EdTech specifically, where the pace tends to be fast and technology is woven into almost every part of the job, this tension plays out in ways that are hard to ignore [10], [11], [12], [13].

From a service management perspective, the standard response to all of this has been to measure what is measurable: uptime, response time, how fast tickets get closed. These numbers are not without value. They keep things under control and help teams notice when something is genuinely going wrong at the system level [14]. But they are built to look at the service from the outside, not from the perspective of the person who is stuck in the middle of a failed login or waiting on an access request with no visible progress. ITSM research has shown that when the focus stays too firmly on operational indicators, the experience side of the picture can stay completely hidden even when the dashboard looks perfectly fine [14]. In small startups, this gap tends to show up in a particular and familiar way. The service is not broken in any dramatic sense. What happens instead is smaller and more persistent: a login that works most of the time but not always, an access request sitting in a queue with no feedback, a support message getting passed around between people without anyone really owning it. Each incident looks minor when taken alone. But they keep happening, and the accumulated weight of them quietly changes how people feel about their tools and their work.

Access services deserve particular attention here because web single sign-on is the actual gateway to the tools people need to do their jobs. When access fails, users need more than a technical fix. They also need clear information that helps them understand what is happening and what comes next [15]. When that explanation is vague or absent, the frustration can linger long after access has been restored. This is why fairness and clarity matter alongside the technical outcome, not just as nice-to-haves but as genuine parts of what makes a service recovery feel complete or incomplete [16], [17], [18], [19]. The same logic applies to the support channel. Adding more self-service options, better search tools, or AI-assisted chatbots does not automatically make the experience better. What actually matters is whether those tools help when something goes wrong and whether the information they provide is clear enough to act on [20], [21], [22]. Simply offering more channels does not reduce friction if the process behind them is still unclear or unresponsive, and this extends to AI-based support tools as well, where acceptance depends heavily on whether the tool genuinely works in context rather than just being available

These patterns were visible from the start in early conversations with three small EdTech startups in Jakarta. Logins that worked smoothly some days and triggered repeated verification loops on others. Locked accounts. Access requests that had to wait on manual approval. Role changes that were slow to reflect in the system. Unstable WiFi during meetings or live demos. Confusion about which channel to actually contact for help. Follow-ups sent into silence, then more follow-ups, then eventually a handoff to someone

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with no context about what had already been tried. None of these problems looked serious on any conventional metric. But in teams where a sprint deadline or a product release depends on everyone having the right access at the right time, small disruptions like these add real weight to an already demanding digital work environment [10], [11], [12], [23], [24]. Research on digital transformation makes this point clearly: major problems rarely arrive as single dramatic failures. They tend to grow from the same kind of small, recurring friction that most measurement systems are simply not built to catch, and how people experience those disruptions day to day has a direct effect on how willing they are to stay engaged with the changes an organisation is trying to make [25], [26].

Employee experience research supports this framing. Work quality is not best understood as a general satisfaction level but as something built through the texture of specific daily interactions, particularly the ones involving friction, uncertainty, and reliance on others [18], [19], [20], [21], [22], [23]. This shows up in how people talk about their work, in the workarounds they quietly adopt to keep things moving, and in the low-grade exhaustion that accumulates when the same small problems keep repeating without any visible response from the people responsible for the service.

This study uses the term experience debt to describe that accumulation. The idea is straightforward: minor recurring disruptions in access and support may look trivial one at a time, but they build into a real hidden burden that shapes how people experience their work every day. Three gaps make this study necessary. ITSM research has established that SLA-centric monitoring leaves experience-level friction undetected [14], but no practical measurement framework exists that operationalises this gap at the touchpoint level for small organisations without dedicated service management resources. Employee experience research confirms that work quality is shaped by the texture of specific daily interactions [18], [19], [20], [21], [22], [23], but this insight has not been translated into a usable instrument for internal IT services at the small startup scale. Work on self-service and AI-assisted support focuses mainly on whether people use those channels, not on how experience accumulates or breaks down while the service is actually being used [15], [16], [17]. This study fills all three gaps by proposing and testing a minimal touchpoint-based XLA, and its central novelty lies in making the distinction between SLA-based operational visibility and touchpoint-level experience visibility both measurable and actionable. SLA metrics tell you whether access was restored and how quickly. The XLA developed here asks something different: whether users understood what was happening while they waited, whether the process felt navigable, and whether they felt genuinely certain the problem was resolved rather than just temporarily patched. These are dimensions that stay invisible to conventional dashboards, and they are exactly where experience debt builds up. The methodological contribution is equally specific. Rather than periodic retrospective satisfaction surveys, this study uses an event-based micro-survey tied to six discrete touchpoints, then integrates dimension-level scores with interview-derived theme frequency into a two-signal priority rule that any small team can apply without specialist ITSM expertise. This differs from how experience has typically been measured in both the ITSM and employee experience literature in ways that directly affect how useful the output is in practice. Four research questions guide the study: RQ1 examines which touchpoints most concentrate experience debt and where low scores first signal its presence; RQ2 describes how experience patterns vary across user roles; RQ3 identifies recurring critical moments and explains why SLA metrics miss them, particularly around information clarity and perceived fairness [14], [27], [28]; and RQ4 specifies the minimum elements for a lightweight XLA template that small teams can realistically sustain. The scope is deliberately bounded to SSO-based access and the internal support that handles access-related problems, as these are the gateway services whose disruption most immediately interrupts daily work in small EdTech startups.

2. METHODS

2.1. Study Design and Settings

This study used a mixed-method design with two parts running side by side [27], [29]. The survey and the interviews were carried out in the same period. Both were analysed separately first, then combined at the end to build one overall interpretation. During data collection and analysis, each part stood on its own. They were only connected in the final reading of the results. The full process can be seen in Figure 1. This design was used because survey data can show where the user experience starts to weaken, but it cannot really tell the reason behind it. Interviews can give that missing story and show what people actually went through, but on their own they do not make it easy to see which patterns keep showing up across different users, roles, and companies [27], [29].

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The study involved three small EdTech startups in Jakarta, written here as Startup A, Startup B, and Startup C. They were chosen because they shared the same basic service setting. Each one used an SSO or identity-based access system as the main way to enter work tools, and each one also had a simple internal support channel for access-related issues [26]. Because of that similarity, the same way of measuring could be used across all three cases in a consistent way. The scope was kept narrow on purpose and only focused on those two service areas, since problems in these areas are usually felt right away and can be followed quite clearly in everyday work [26]. A short summary of the three cases is shown in Table 1.

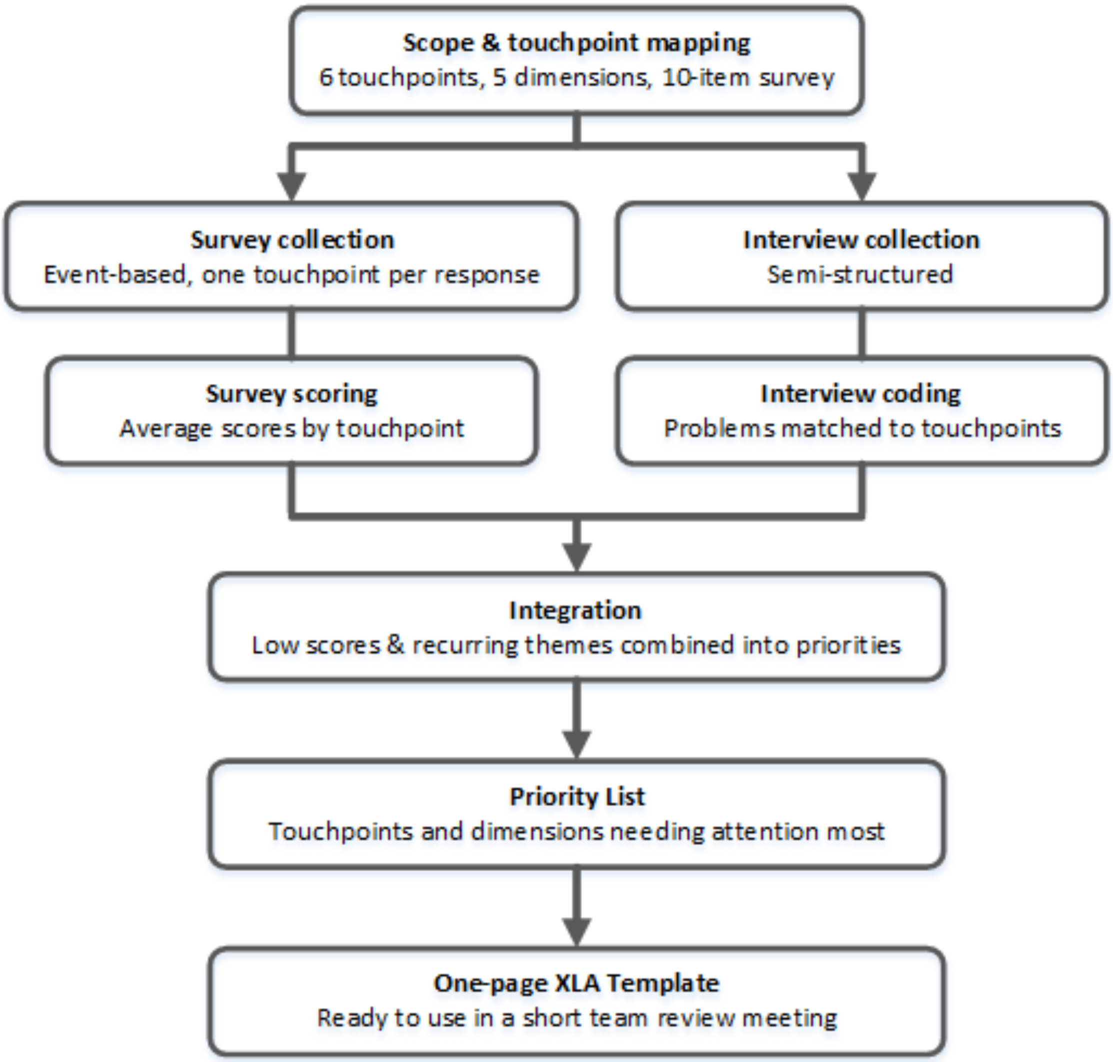

Figure 1. Research workflow

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Table 1. Case profiles, service scope, and data volume

Component	Startup A	Startup B	Startup C
Main operational location	South Jakarta	West Jakarta	Central Jakarta and South Jakarta
Work arrangement	Hybrid	Hybrid with remote dominant	Hybrid
Services measured	SSO or identity service for accessing work tools, internal support channel	SSO or identity service for accessing work tools, internal support channel	SSO or identity service for accessing work tools, internal support channel
Valid micro-survey responses	92	74	108
Unique micro-survey respondents	34	27	41
Number of interviews	6	6	6

Participants came from typical startup roles including developers, QA staff, product managers, designers, and operational staff. In the analysis, roles were used only to examine whether experience patterns differed across groups [17].

2.2. Touchpoint Mapping and Measures

Instead of asking users about IT services in a broad or general way, this study looked at the actual points where users really deal with the service [23]. Six touchpoints were used in the same way across the three startups. TP1 refers to routine login and was treated as the normal starting point. TP2 refers to access problems such as failed login attempts or locked accounts. TP3 refers to account recovery, for example when users need to reset a password. TP4 refers to requests for new access or changes in permissions. TP5 refers to the moment users contact internal support, where the way the process is handled can matter as much as the final fix itself [21], [30], [31]. TP6 refers to the point when users feel their issue is fully resolved [30]. Using the same six touchpoints in all three cases made the comparison more consistent [23].

At each touchpoint, the experience was measured through five dimensions taken from earlier studies on service recovery, fairness, and internal IT support that were discussed in the Introduction [20], [21], [30], [31], [32], [33]. These dimensions were access, clarity of information, ease of process, fairness, and confidence that the issue had really been resolved. Each dimension was measured with two questions using a one to five scale, so the instrument had ten questions in total. The full set of items is presented in Table 2. The score for each dimension was calculated by averaging the two related items.

Table 2. Survey instrument: dimensions and items

Dimension	Item
Access	I was able to access what I needed at this stage
	The access worked the way I expected it to
Clarity of information	I received clear information about what was happening
	I understood what I needed to do at each step
Ease of process	The steps I had to go through were straightforward
	I was able to complete what I needed without unnecessary effort
Fairness	The way my issue was handled felt fair
	I felt my issue received the attention it deserved
Resolution confidence	I am confident that my issue has been fully resolved
	I do not expect the same problem to return soon

2.3. Data Collection

The survey was based on real situations that people were actually going through. They were not asked to give a general opinion about the service. They answered based on something that was happening to them at that time or had just happened [23], [27], [28], [29], [34]. Before answering, each person first chose the touchpoint that matched their situation, so every response was tied to one real experience. Because of this, the same person could fill in the survey more than once during the study if they went through

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more than one situation. That is why the total number of valid responses in each startup was higher than the number of people who joined [23].

The interview data came from semi-structured interviews that focused on moments people felt were especially disturbing or difficult [35], [36]. The participants were chosen on purpose so the study could include different kinds of roles in each startup, especially people who had problems with access or had asked internal support for help [35]. The same interview guide was used in all three startups. Each interview started with one situation the person could still remember clearly. After that, they were asked what happened, how it affected their work, what they did, and what could have made the experience better [36], [37]. Using the same guide in all three startups made it easier to compare the answers and helped keep the questions fair for everyone [37].

2.4. Data Analysis and Integration

Quantitative and qualitative data were analysed separately first, then brought together at the end [24], [38], [39]. For the survey data, the scores at each touchpoint were read using means and medians, then compared by startup and by role group [23], [38]. The goal here was not to make broad statistical claims. It was simply to see the pattern clearly.

For the interview data, each transcript was read carefully and every repeated description of a service problem was linked to one of the six touchpoints and one of the five dimensions from Section 2.2 [40], [41]. This step was checked twice so the same kind of problem would always be placed in the same category. If a description was not clear or seemed to fit more than one touchpoint, the transcript was read again and the decision was based on the participant's own words and the situation they described, not on assumption. Nothing was treated as final until those unclear parts had been resolved in that way.

After that, the survey results and the interview results were looked at together at the level of each touchpoint [18], [24], [39]. The purpose was simple. We wanted to find out which parts of the service really needed attention first. A touchpoint and dimension were treated as a priority only when two signs appeared at the same time. One sign came from the survey. If the average score was very low, it meant users were having a poor experience there. The other sign came from the interviews. If many people kept

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describing the same kind of problem at that same point, it meant the issue was not just random or personal, but something that kept happening. Both signs had to appear together. A low score alone was not enough, because one weak result in one place does not always mean the same issue is truly common. In the same way, one complaint in an interview was also not enough unless it was supported by the survey pattern.

When two items had the same average score, the one that came up more often in the interviews was placed higher, because that meant more people were describing the same problem. If they were still tied after that, the one with more survey responses was placed first, because it was supported by more cases. In this way, the priority list was not based on one number alone and not based on one story alone. It was built by combining both. After the priority list was set, the one-page XLA template was made from the same micro survey data already collected in Section 2.3, so no new data collection was needed. Each priority touchpoint became one row in the template. In that row, the dimension with the lowest score was written as the main area of concern. Then a short note was added from the interview findings to explain what users were actually facing behind that low score. The row also shows how many responses came from that touchpoint and how many of those responses gave a score of 1 or 2 on the five-point scale, because scores at that level showed that the experience had clearly gone wrong. At the end of each row, space was left for the team to write what action they plan to take and when they will check the result again. The template was kept to one page so a small team could read it quickly, discuss it in one short meeting, and decide what to fix first without needing specialist ITSM support.

2.5. Research Quality and Ethics

Before the data collection began, the survey questions and the interview guide were revised several times so the wording would be easier to understand for people in different roles and different startups [36], [37], [42]. The main concern was to avoid unclear or confusing wording. The study also looked stronger because similar patterns appeared in three separate startups that were not connected to each other, which gave more confidence that the findings were not only caused by one local situation [18], [24]. Everyone joined the study by choice. They were told clearly what the study was about before taking part, and they were also told that they could stop at any time if they wanted [25], [37]. No real names were used in the data. The names of the startups and the participants were replaced with codes throughout the study to protect privacy [25].

3. RESULTS AND DISCUSSION

The quantitative findings in this chapter are derived from event-based micro surveys. In this study, the focus is not on individuals, but on the touchpoints they experience. Therefore, one person may be recorded more than once if they experience and report more than one touchpoint during the data collection period. The term "unique respondents" is used to indicate the number of people who participated, while valid micro-survey responses indicate the total number of completed survey responses that can be used in the analysis. In Tables 3 to 5, the n responses column shows how many responses were received at each touchpoint. The mean and median values are calculated from scores of 1 to 5 on the dimensions of experience assessed, with higher numbers indicating a better experience.

3.1. Case Profiles and Respondents

This study involved three small EdTech startups in the Jakarta area, whose names have been changed to Startup A, Startup B, and Startup C. All three develop educational applications and operate in a hybrid model, so their daily work is highly dependent on internal digital services. The focus of this study was the same in all cases, namely SSO or identity-based access as a gateway to work tools, and the internal support used when there are access problems or other service disruptions. In daily practice, this support usually runs through internal chat and a simple problem handling flow.

Table 2 summarizes the profiles of the three cases as well as the data collected. In the results section, there are two terms that need to be distinguished. Unique respondents are the number of people who participated in the survey. Meanwhile, valid micro survey responses are the total number of completed and analyzable answers. The survey was tied to specific touchpoints. One respondent could submit more than one survey during the data collection period. This happened when the respondent encountered more than one touchpoint. The total number of responses is therefore higher than the number of individual respondents. Startup A contributed 92 valid responses from 34 respondents. Startup B contributed 74 valid responses from 27 respondents. Startup C contributed 108

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valid responses from 41 respondents. The qualitative dataset included 18 interviews. Each startup contributed six informants.

The respondents came from typical startup roles. These included developers, QA staff, product managers, designers, non technical operational staff. Startup A consist of 18 developers, 4 QA staff, 5 product managers, 3 designers, 4 operational staff. Startup B consist of 13 developers, 3 QA staff, 4 product managers, 2 designers, 5 operational staff. Startup C consist of 22 developers, 5 QA staff, 6 product managers, 4 designers, 4 operational staff. Interview informants were also taken from different roles so that the findings would not only represent one group.

3.2. Experience Score Map by Touchpoint and Dimension

This section presents the main quantitative findings in the form of experience maps for each touchpoint for SSO services or identity-based access and related internal support at three startups. What is being assessed here is not the service in general, but rather the experience at a specific point of interaction when the survey was completed. Therefore, each answer always refers to a specific touchpoint. The same six touchpoints were applied in every case. TP1 covered routine login. TP2 covered access issues. TP3 referred to account recovery. TP4 referred to permission requests or changes. TP5 captured requests for help through internal support channels. TP6 marked confirmation that the issue was resolved. Using the same set made patterns across startups easier to read. User experience was summarized through five minimal XLA dimensions: access, clarity of information, ease of process, fairness, confidence that the issue was fully resolved. All items used a 1 to 5 scale. Higher scores reflected a better experience. Each dimension score came from the average of its related items. Tables 3 to 5 display the results for each startup in the form of average scores, with the median in parentheses. The n responses column shows the number of valid responses at each touchpoint.

Table 3. Experience score map by touchpoint and dimension for Startup A

Touchpoint	Touchpoint description	n responses	Access mean (median)	Information clarity mean (median)	Process ease mean (median)	Fairness mean (median)	Resolution confidence mean (median)
TP1	Login or routine access to work tools	30	4.3 (4)	4.0 (4)	4.2 (4)	3.9 (4)	4.1 (4)

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Touchpoint	Touchpoint description	n responses	Access mean (median)	Information clarity mean (median)	Process ease mean (median)	Fairness mean (median)	Resolution confidence mean (median)
TP2	Access issues, for example login failure, repeated verification, or locked account	18	2.6 (3)	2.7 (3)	2.5 (2)	2.8 (3)	2.6 (3)
TP3	Account recovery, for example password reset or access recovery	12	3.2 (3)	3.0 (3)	3.1 (3)	3.1 (3)	3.1 (3)
TP4	Request or change of access rights, for example access to repository, project, or specific application	10	3.3 (3)	2.9 (3)	3.0 (3)	2.7 (3)	3.0 (3)
TP5	Requesting help through the internal support channel	14	3.1 (3)	2.9 (3)	3.0 (3)	2.7 (3)	2.9 (3)
TP6	Resolution confirmation, for example the issue is declared resolved or access has been restored	8	3.6 (4)	3.5 (4)	3.4 (3)	3.2 (3)	3.5 (4)

Note for Table 3: This table reports scores based only on valid micro survey responses linked to the touchpoint chosen by participants. The “n responses” column shows how many valid responses were received at each touchpoint. The score for each dimension is displayed as an average, while the median value is written in parentheses.

Table 4. Experience score map by touchpoint and dimension for Startup B

Touchpoint	Touchpoint description	n responses	Access mean (median)	Information clarity mean (median)	Process ease mean (median)	Fairness mean (median)	Resolution confidence mean (median)
TP1	Login or routine access to work tools	24	4.2 (4)	3.8 (4)	4.1 (4)	3.7 (4)	3.9 (4)
TP2	Access issues, for example login failure, repeated verification, or locked account	14	2.5 (2)	2.4 (2)	2.4 (2)	2.6 (3)	2.4 (2)
TP3	Account recovery, for example password reset or access recovery	10	3.0 (3)	2.7 (3)	2.9 (3)	2.9 (3)	2.8 (3)
TP4	Request or change of access rights, for example access to a repository, project, or specific application	8	3.1 (3)	2.6 (3)	2.8 (3)	2.5 (2)	2.7 (3)
TP5	Requesting help through the internal support channel	12	3.0 (3)	2.6 (3)	2.8 (3)	2.4 (2)	2.6 (3)
TP6	Resolution confirmation, for example the issue is declared resolved or access has been restored	6	3.4 (3)	3.1 (3)	3.2 (3)	2.9 (3)	3.1 (3)

Note for Table 4: Scores are calculated from valid micro survey responses that selected the corresponding touchpoint. The "n responses" column shows how many valid responses were received at each touchpoint. The score for each dimension is displayed as an average, while the median value is written in parentheses.

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Table 5. Experience score map by touchpoint and dimension for Startup C

Touchpoint	Touchpoint description	n responses	Access mean (median)	Information clarity mean (median)	Process ease mean (median)	Fairness mean (median)	Resolution confidence mean (median)
TP1	Login or routine access to work tools	36	4.4 (4)	4.1 (4)	4.3 (4)	3.8 (4)	4.2 (4)
TP2	Access issues, for example login failure, repeated verification, or locked account	20	2.7 (3)	2.6 (3)	2.6 (3)	2.7 (3)	2.6 (3)
TP3	Account recovery, for example password reset or access recovery	14	3.3 (3)	3.1 (3)	3.2 (3)	3.0 (3)	3.1 (3)
TP4	Request or change of access rights, for example access to a repository, project, or specific application	12	3.2 (3)	2.8 (3)	2.9 (3)	2.4 (2)	2.8 (3)
TP5	Requesting help through the internal support channel	16	3.1 (3)	2.8 (3)	2.9 (3)	2.5 (2)	2.7 (3)
TP6	Resolution confirmation, for example the issue is declared resolved or access has been restored	10	3.7 (4)	3.4 (3)	3.4 (3)	3.0 (3)	3.4 (3)

Note for Table 5: Scores are calculated from valid micro survey responses that selected the corresponding touchpoint. The “n responses” column shows how many valid responses were received at each touchpoint. Each dimension value is presented as the mean, with the median shown in parentheses.

3.3. Main Pain Points Based-on the Lowest Scores

This section focuses on the points in Tables 3 to 5 where experience falls most sharply. In this study, a pain point does not refer to a general complaint about the service. It refers to a specific combination of touchpoint and experience dimension that records a particularly low mean score. Because each mean is based on all valid responses tied to the same touchpoint, the pain points reported here show, in a fairly direct way, where users' experiences break down most clearly within each startup. Using that same basis across cases also makes the comparison more consistent.

A similar pattern appears across the three startups. In Startup A, the weakest results are concentrated at TP2, which covers access issues. The lowest score at this touchpoint is process ease, with a mean of 2.5 and a median of 2. Access and confidence of resolution are also low at TP2, both with a mean of 2.6 and a median of 3. Clarity of information at TP2 also reaches 2.7 with a median of 3, which places it at the same level as the fairness scores at TP4 and TP5. Lower scores also appear in the fairness dimension at TP4, related to permission changes, and at TP5, related to support requests, both with a mean of 2.7 and a median of 3. These results are summarized in Table 6. In Startup B, TP2 again marks the weakest part of the journey. At this point, clarity of information, ease of process, and confidence of resolution all record a mean of 2.4 with a median of 2. At TP2, the access dimension also records a mean of 2.5 and a median of 2. The figure is the same as the fairness score at TP4. Another low result appears in fairness at TP5 (Mean 2.4, median 2). Fairness at TP4 also remains low (Mean 2.5, median 2). These results are summarized in Table 7. In Startup C, the lowest point on the map appears in fairness at TP4 (Mean 2.4, median 2). The next lowest point appears in fairness at TP5 (Mean 2.5, median 2). TP2 also remains a weak point, particularly in terms of clarity of information, ease of process, and confidence that the problem will actually be resolved. In these three aspects, the scores are all around the average of 2.6 with a median of 3. A summary can be seen in Table 8. When these three cases are read together, two patterns are quite apparent. TP2 appears repeatedly among the lowest scoring touchpoints. The weakest dimensions at this touchpoint are clarity, ease of process, confidence of resolution. TP4 and TP5 also show low scores, especially in fairness. The mean scores at these points range from 2.4 to 2.7. Table 9 summarizes the shared pattern across cases.

Table 6. Pain points in Startup A based on the lowest mean scores

Rank	Touchpoint	Lowest dimension	Mean score	Median
1	TP2 Access issues	Process ease	2.5	2
2	TP2 Access issues	Access	2.6	3
3	TP2 Access issues	Resolution confidence	2.6	3
4	TP2 Access issues	Information clarity	2.7	3
5	TP5 Help request	Fairness	2.7	3

Note: TP4 has the same fairness score as TP5 (both 2.7). TP5 ranks higher simply because more people reported it: 14 responses vs. 10. That was our tiebreaker. Both touchpoints are discussed in Section 3.3.

Table 7. Pain points in Startup B based on the lowest mean scores

Rank	Touchpoint	Lowest dimension	Mean score	Median
1	TP2 Access issues	Information clarity	2.4	2
2	TP2 Access issues	Process ease	2.4	2
3	TP2 Access issues	Resolution confidence	2.4	2
4	TP5 Help request	Fairness	2.4	2
5	TP2 Access issues	Access	2.5	2

Table 8. Pain points in Startup C based on the lowest mean scores

Rank	Touchpoint	Lowest dimension	Mean score	Median
1	TP4 Access rights change	Fairness	2.4	2
2	TP5 Help request	Fairness	2.5	2
3	TP2 Access issues	Information clarity	2.6	3
4	TP2 Access issues	Process ease	2.6	3
5	TP2 Access issues	Resolution confidence	2.6	3

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Table 9. Cross startup patterns in the lowest mean scores

Touchpoint	Dimensions most frequently appearing as lowest	Mean score range across startups	Related startups
TP2 Access issues	Information clarity, process ease, resolution confidence	2.4–2.7	A, B, C
TP4 Access rights change	Fairness	2.4–2.7	A, B, C
TP5 Help request	Fairness	2.4–2.7	A, B, C

Note for Tables 6 to 9: Pain points are determined based on the lowest mean scores observed in the experience score maps shown in Tables 3 to 5. The median is included as additional information to show the central tendency of scores within the same touchpoint and dimension combination.

3.4. Variation in Results by User Role

This section looks at the survey results by job type. In this study, each answer was treated as one separate case. Because of that, the same person could appear more than once if they filled in the survey for more than one touchpoint during the survey period. The roles were grouped into two simple categories. The technical group included developers and QA staff. The non technical group included product managers, designers, and operational staff. Tables 10 and 11 show the average scores for both groups in each startup and also in the full combined data. A similar pattern appeared in all three startups. The non technical group gave higher scores on all five dimensions than the technical group. This does not mean the study is claiming a proven difference in a strict statistical sense. The survey in this research was used to describe patterns in experience, not to test formal hypotheses. So the finding here should be read carefully. It shows that, in this dataset, the technical group reported a less positive experience on average. It does not prove that the same result would always appear in a larger population, and it also does not prove that job role by itself was the direct cause. Still, the pattern is meaningful enough to note. One possible reading is that technical staff may face more friction because they deal with access systems more often and in more varied situations. That explanation is

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still only a possible reading from the pattern seen here, and it would need to be examined again in future research with a larger and more structured sample.

Table 10. Aggregated experience scores by dimension according to role group, by startup

Startup	Role group	n responses	Access mean (median)	Information clarity mean (median)	Process ease mean (median)	Fairness mean (median)	Resolution confidence mean (median)
A	Technical (Dev, QA)	62	3.40 (3)	3.20 (3)	3.30 (3)	3.10 (3)	3.25 (3)
A	Non-technical (PM, Designer, Ops)	30	3.62 (4)	3.46 (4)	3.43 (3)	3.43 (3)	3.47 (3)
B	Technical (Dev, QA)	49	3.25 (3)	2.90 (3)	3.10 (3)	2.85 (3)	2.95 (3)
B	Non-technical (PM, Designer, Ops)	25	3.51 (4)	3.21 (3)	3.37 (3)	3.23 (3)	3.28 (3)
C	Technical (Dev, QA)	72	3.50 (3)	3.20 (3)	3.35 (3)	2.95 (3)	3.25 (3)
C	Non-technical (PM, Designer, Ops)	36	3.66 (4)	3.47 (3)	3.49 (3)	3.31 (3)	3.43 (3)

Note for Table 10: The values represent aggregates across touchpoints within each startup based on all micro survey responses from the corresponding role group. The n responses column shows the number of micro survey responses used in the calculation. The pooled results from all three startups show the same pattern. Table 11 reports technical group means of 3.40 for access, 3.12 for information clarity, 3.27 for process ease, 2.97 for fairness, 3.17 for confidence of resolution. The non technical group scores higher on every dimension. The mean scores are 3.61, 3.40, 3.44, 3.33, 3.40. The medians show where most responses cluster within each group.

Table 11. Aggregated experience scores across startups according to role group

Role group	n responses	Access mean (median)	Information clarity mean (median)	Process ease mean (median)	Fairness mean (median)	Resolution confidence mean (median)
Technical (Dev, QA)	183	3.40 (3)	3.12 (3)	3.27 (3)	2.97 (3)	3.17 (3)

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Role group	n responses	Access mean (median)	Information clarity mean (median)	Process ease mean (median)	Fairness mean (median)	Resolution confidence mean (median)
Non-technical (PM, Designer, Ops)	91	3.61 (4)	3.40 (3)	3.44 (3)	3.33 (3)	3.40 (3)

Note for Table 11: For each experience dimension, the table reports the average score, with the median shown in parentheses. The figures are based on all micro survey responses from the same role group across the three startups. The n responses column shows how many responses were included in calculating those values for each role group.

3.5. Qualitative Findings on Moments of Truth

The qualitative findings came from interviews with people in the three startups. The conversation focused on the moments they remembered as the most difficult when dealing with login access, permission problems, or internal support. After all interviews were read again, stories that sounded similar were grouped together, then linked to the same touchpoints used in the survey part. Table 12 shows that result. It helps show which problems came up most often, where they usually happened, and how they appeared across the three startups. The "n informants" column only shows how many people mentioned the problem at least once. It does not mean the problem happened only that many times.

Table 12. Mapping of moments of truth themes to touchpoints and distribution of themes across startups

Moments of truth theme	Main related touchpoint	Startup A informants (out of 6)	Startup B informants (out of 6)	Startup C informants (out of 6)	Total (out of 18)
Uncertainty about next steps and status during access issues	TP2, TP5	5	6	5	16
Repeating the issue explanation and handoffs in the support channel	TP5, TP4	4	4	5	13
Access request or access change feels blocked	TP4	4	3	4	11

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Moments of truth theme	Main related touchpoint	Startup A informants (out of 6)	Startup B informants (out of 6)	Startup C informants (out of 6)	Total (out of 18)
Account recovery works, but resolution confidence is not fully formed	TP3, TP6	3	4	3	10
Workarounds to keep work moving	TP2, TP5, TP4	3	3	4	10

Note for Table 12: The n informants values show how many informants mentioned the theme at least once during the interview, not how many events occurred. The column for the main related touchpoint shows how each theme was mapped to the same touchpoints used in the quantitative results.

Some patterns came up again and again. The biggest one was confusion during access problems. People often did not know what was actually wrong, what they should do next, or whether anyone was already handling the issue. This came up mostly at TP2, and sometimes at TP5, and it was mentioned by 16 out of 18 informants. Another common problem was having to repeat the same explanation to different people. This happened most often at TP5, sometimes also around TP4, and it was mentioned by 13 informants. There was also a strong feeling that permission requests could just sit there with no clear movement. That was mostly seen at TP4 and was mentioned by 11 informants. Some people also said that even after the system seemed to work again, they still did not really feel sure the problem was finished. That came up around TP3 and TP6 and was mentioned by 10 informants. Another repeated pattern was the use of temporary workarounds just so work could continue. That appeared across TP2, TP4, and TP5 and was also mentioned by 10 informants. One developer from Startup B said that when he suddenly could not log in, he was never sure whether the problem came from his own account, from the device, or from the system, so he usually tried several things first before asking for help. A QA informant from Startup C said she had already explained the issue in chat, then was told to make a ticket, and later had to explain everything again to another person. A developer from Startup A said the hardest part of a permission request was not only the waiting, but not knowing whether the request was even being processed. Another developer from Startup B said he could log in again, but still did not feel sure the same issue would not happen again the next day.

What happened at TP2 is important because it shows that the problem was not only technical. People arrived there suddenly, without warning, and often without enough information to understand what was going on. In that kind of situation, the lack of clear information can make the experience feel even worse than the disruption itself [15], [24]. A similar thing can be seen at TP4 and TP5. At those points, the issue was not only whether the request would eventually be completed. What bothered people was being left waiting without being able to see what was happening. Earlier studies have also shown that when people cannot see any progress, they often feel the process is unfair, even if the request is finally approved or fixed [16], [18], [19]. So the interview findings are useful not because they simply repeat the survey results, but because they show what was happening behind the low scores. They make the pattern much easier to understand and show that these were not isolated complaints, but repeated experiences that appeared across the three startups.

3.6. Synthesis of Quantitative and Qualitative Results for the Priority List

This section puts the survey results and the interview findings side by side to see which parts of the service should be treated as the biggest concerns first. The score maps in Tables 3 to 5 show where the experience was weakest, while Table 12 helps explain what people were actually going through at those same points. The severity gap simply shows how far a score is from 5, which was the best possible score in the survey. So if the gap is larger, it means the experience was worse. To decide the order of priority, the study first looked at which items had the lowest average score. If two items had the same score, the one that was mentioned more often in the interviews was placed higher. If they were still the same, the one that had more survey responses was placed first. Table 13 shows the five main priority items in each startup, and Table 14 shows the five main priority items when all three startups are read together. What appears from this is actually quite easy to understand. TP2 keeps showing up near the top because this is the point where users suddenly lose access and usually do not know what is happening, what caused it, or what they should do next. In SSO settings, earlier studies also describe this kind of situation as one where users have very little information during an access failure [15], [24]. TP4 and TP5 show another problem. At these points, the issue is often not only whether the request will eventually be completed. What seems to matter more is that users are left waiting without being able to see any progress. Earlier studies have also shown that when people cannot see what is happening, they often feel the process is

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unfair, even if the request is finally handled [16], [18], [19]. So the priority list here is not just pointing at low numbers. It is showing where the service keeps creating the most difficult experience for users, and it also gives a clearer picture of why those problems keep appearing.

Table 13. Top five pain point priorities per startup based on the integration of lowest scores and theme frequency

Startup	Rank	Touchpoint	Affected dimension	Mean score	Severity gap (5 – mean)	Main moments of truth theme	Theme frequency (n informants)
A	1	TP2 Access issues	Process ease	2.5	2.5	Uncertainty about next steps and status	5 of 6
A	2	TP2 Access issues	Access	2.6	2.4	Uncertainty about next steps and status	5 of 6
A	3	TP2 Access issues	Resolution confidence	2.6	2.4	Recovery works but resolution confidence is not fully formed	3 of 6
A	4	TP2 Access issues	Information clarity	2.7	2.3	Uncertainty about next steps and status	5 of 6
A	5	TP5 Help request	Fairness	2.7	2.3	Repeating the issue explanation and support handoffs	4 of 6
B	1	TP2 Access issues	Information clarity	2.4	2.6	Uncertainty about next steps and status	6 of 6
B	2	TP2 Access issues	Process ease	2.4	2.6	Uncertainty about next steps and status	6 of 6
B	3	TP2 Access issues	Resolution confidence	2.4	2.6	Recovery works but resolution confidence is not fully formed	4 of 6
B	4	TP5 Help request	Fairness	2.4	2.6	Repeating the issue explanation	4 of 6

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Startup	Rank	Touchpoint	Affected dimension	Mean score	Severity gap (5 – mean)	Main moments of truth theme	Theme frequency (n informants)
						and support handoffs	
B	5	TP2 Access issues	Access	2.5	2.5	Uncertainty about next steps	6 of 6
C	1	TP4 Access rights change	Fairness	2.4	2.6	Access request or access change feels blocked	4 of 6
C	2	TP5 Help request	Fairness	2.5	2.5	Repeating the issue explanation and support handoffs	5 of 6
C	3	TP2 Access issues	Information clarity	2.6	2.4	Uncertainty about next steps and status	5 of 6
C	4	TP2 Access issues	Process ease	2.6	2.4	Uncertainty about next steps and status	5 of 6
C	5	TP2 Access issues	Resolution confidence	2.6	2.4	Recovery works but resolution confidence is not fully formed	3 of 6

Table 14. Top five pain point priorities across startups based on consistent low scores and dominant themes

Rank	Touchpoint	Affected dimension	Mean score per startup (A, B, C)	Mean across startups	Severity gap across startups	Main moments of truth theme	Total theme frequency
1	TP2 Access issues	Process ease	2.5, 2.4, 2.6	2.50	2.50	Uncertainty about next steps and status	16 of 18

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Rank	Touchpoint	Affected dimension	Mean score per startup (A, B, C)	Mean across startups	Severity gap across startups	Main moments of truth theme	Total theme frequency
2	TP5 Help request	Fairness	2.7, 2.4, 2.5	2.53	2.47	Repeating the issue explanation and support handoffs	13 of 18
3	TP4 Access rights change	Fairness	2.7, 2.5, 2.4	2.53	2.47	Access request or access change feels blocked	11 of 18
4	TP2 Access issues	Resolution confidence	2.6, 2.4, 2.6	2.53	2.47	Recovery works but resolution confidence is not fully formed	10 of 18
5	TP2 Access issues	Information clarity	2.7, 2.4, 2.6	2.57	2.43	Uncertainty about next steps and status	16 of 18

3.7. Main Findings and Answers to the RQ

Across the three startups, the pattern was broadly the same. Experience debt in internal IT services did not appear everywhere in the same way. It gathered at certain touchpoints and stood out most in certain dimensions. That picture appeared in Startup A, Startup B, Startup C, and in the combined results as well. Table 15 links each research question with its main answer and the tables that support it. The next discussion does not repeat the Results section in detail. The focus shifts to what these patterns tell us and why they appeared in that form.

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Table 15. Summary of research question answers and references to the Results tables

Research Question	Summary answer	Main evidence in Results
RQ1: Which touchpoints most shape the experience of internal services and where is experience debt most visible?	The lowest scores concentrate on TP2 access issues as well as TP4 access rights change and TP5 help request, while TP1 routine access consistently shows higher scores.	Tables 3–5; Tables 6–9; Table 14
RQ2: How does the experience profile vary descriptively across user roles?	There are variations in aggregated dimension scores between technical and non-technical role groups in each startup and in the cross-startup aggregate.	Tables 10–11
RQ3: Which moments of truth are most frequently reported and how are they mapped to touchpoints?	Dominant themes include uncertainty about next steps and status (TP2, TP5), repeating issue explanations and support handoffs (TP5, TP4), access requests feeling blocked (TP4), resolution confidence not fully formed (TP3, TP6), and workarounds (TP2, TP5, TP4).	Table 12
RQ4: What minimum elements are essential for a minimal XLA template and priority list?	The minimum elements include a focus on touchpoints TP2, TP4, and TP5, main affected dimensions (TP2: information clarity, process ease, resolution confidence; TP4–TP5: fairness), and the frequency of moments of truth themes as priority signals.	Tables 12–14

3.8. Discussion

The weak scores at TP2 in all three startups do not seem to happen by chance. This point in the process keeps causing the same kind of trouble. TP2 is the moment when access suddenly fails. People do not expect it. They usually do not know what caused it, whether the problem comes from their own side or from the system, and they often do not know what they should do first. That is why the scores are low in things like clarity, ease, and confidence that the problem is really over. Earlier studies on SSO settings also show that when access suddenly breaks, clear information matters a lot [24]. If users do not get a clear explanation or a useful update, the whole experience feels worse than the technical issue itself. A normal SLA view can show that access was restored and how long it took, but it cannot show whether users understood what was happening while they were waiting, whether the steps made sense to them, or whether they felt sure the problem was truly finished and would not come back again. That part matters because low confidence creates extra checking, small workarounds, repeated interruptions, and over time that kind of thing adds mental strain in a very real way [4], [5], [6], [7], [10], [11], [12]. TP4 and TP5 are different. The problem there is not mainly sudden confusion. It is more about having to depend on other people. At TP4, users submit a request for access or permission and then have to wait for someone else to act on it. At TP5, they ask for help through an internal support channel, and the case may move from one handler to another. In both situations, users are left in the dark. They have already done their part, but they cannot really see what is happening after that. Earlier work on fairness in service situations shows that people do not judge fairness only from the final result. They also care about whether the process feels clear, steady, and respectful [16], [18], [19]. In small startups, requests like these often move through simple channels with no visible queue, no clearly named owner, and no timeline that users can trust. A request may still be moving, or it may simply be sitting there, and from the user side those two things can look exactly the same. That is where the feeling of unfairness comes from. Even if the problem is eventually fixed, the waiting still feels bad. Earlier research on support handoffs shows something similar. Every time a case is passed from one person to another, frustration tends to rise, even if the issue is later resolved [18]. A normal SLA dashboard may still label the case as completed on time, but the XLA view in Tables 13 and 14 shows that these moments still belong to the weakest parts of the whole journey.

The similar scores across the three startups also need to be read carefully. Similar numbers do not mean the daily experience was identical. Two startups can end up with almost the same score even when the situations behind those scores are quite different. That is one reason a single satisfaction number can be misleading. It smooths everything out. A touchpoint view keeps more detail visible because each score comes from one specific kind of experience, not from one broad opinion about the service overall. Table 16 helps show that difference more clearly. The scores show where the weak points are, and the interview findings help explain what was happening in those places.

When all of this is read together, the picture becomes more understandable. The biggest problems do not appear during routine use, which is why TP1 still looks relatively stable. The trouble grows when work is interrupted, when recovery feels uncertain, or when users have to depend on someone else and cannot see what is happening. That is why TP2, TP4, and TP5 stand out. Earlier research on employee experience has made a similar

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point. People do not experience work as one single feeling. What shapes it are the small moments they go through every day, especially the ones that involve friction, uncertainty, and dependence on other people [43], [44], [45], [46], [47], [48]. The pattern in this study fits that view quite closely. What strengthens it further is that the same weak points kept appearing in three different startups that did not share staff, management, or work history. So this looks less like a problem caused by one local team and more like a pattern built into the way SSO based access and internal support often work in small digital teams. Research on self service and AI assisted support points in a similar direction. Adding more channels does not automatically reduce friction when the information is still unclear and the process still feels hard to follow [20], [21]. That matters in small startups because repeated small disruptions are often where larger digital transformation problems start to grow [25], and people's daily experience of those disruptions affects whether they stay willing to go along with change in the organisation [26].

Table 16. Complementary roles of minimal XLA and moments of truth at priority touchpoints

Priority touchpoint	What the minimal XLA score shows (quantitative)	What moments of truth explain (qualitative)	Why scores may appear similar across startups
TP2 Access issues	Low dimensions repeatedly appear in information clarity, process ease, and resolution confidence	Forms of uncertainty about next steps or status and the sequence of actions when access fails	Access recovery touchpoints are relatively universal; Likert summaries compress variation into a narrow range
TP4 Access rights change	The fairness dimension frequently appears as low	Detailed experiences of waiting and perceptions that the process feels blocked	Access rights processes often involve coordination; process paths may differ even if the final outcome is similar
TP5 Help request	Fairness and information clarity frequently appear as low	Repeating the issue explanation, handoffs in handling, and unclear status	Support channels exist in all startups, but operational practices vary
TP3 and TP6 Recovery and confirmation	Resolution confidence is not always high	Narratives of concern that the issue may recur	Scores capture the final perception, while interviews

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Priority touchpoint	What the minimal XLA score shows (quantitative)	What moments of truth explain (qualitative)	Why scores may appear similar across startups
		and the need for backup steps or workarounds	reveal repeated experiences over time

The method used in this study also adds something practical. Earlier ITSM work has already shown that SLA based monitoring often misses the friction users actually feel [14], but it has not really given small organisations a simple way to capture that at the level of real service interactions. Employee experience research has shown that daily digital interactions affect work quality [43], [44], [45], [46], [47], [48], but it has not turned that idea into a simple tool for internal IT services in small startups. Research on self service and AI assisted support usually pays more attention to whether people use those channels than to how frustration builds up during use [20], [21].. What this study adds is a lighter and more practical way to look at the problem. It uses a short event based micro survey tied to six clear touchpoints, then reads those results together with the repeated themes from interviews through a simple priority process. That is what leads to the one-page XLA template in Table 17. The point is not complexity. The point is that a small team can read it, explain it, and use it in a short meeting without needing special ITSM expertise. This is different from the usual survey approach where people are asked to look back and give one general impression of a service. That kind of question pushes many different experiences into one overall score, and once that happens it becomes hard to see exactly where the service is breaking down. The event-based approach used here avoids that by tying every answer to one real incident at one known touchpoint. That is what makes the priority list possible, and that is also what makes the one-page template something another small organisation could use in the same way.

3.9. Implications for ITSM Practice in Small Startups: Minimal XLA as a Practical Artifact

The findings of this study point to a clear practical implication. Small startups do not need enterprise level ITSM maturity before they can manage internal service quality in a more systematic way. SLA numbers and other operational indicators still matter because they show whether services are running and whether targets are being met [14]. Even so, in these three startups, the most disruptive problems did not appear during normal service use. They appeared more clearly when users were trying to recover access, request permissions, or seek help, especially at TP2, TP4, and TP5. The same weak points also appeared in similar forms across all three cases. This makes the practical issue less about whether those touchpoints should be monitored, and more about how they can be monitored without creating extra burden for a small team. That is the purpose of the one-page XLA template in Table 17. It was developed directly from the priority findings in this study. The aim is not to introduce a new monitoring system, but to help teams pay attention to a small set of experience signals at the points where service quality most often starts to weaken, and to review those signals alongside the operational indicators they already use. At TP2, this makes it easier to see parts of the recovery experience that SLA numbers usually miss, such as whether users understood what was happening, whether the process felt manageable, and whether they truly felt sure the issue was resolved. At TP4 and TP5, it helps make visible the fairness side of the experience, since the problem at those points often comes not only from the technical issue itself but also from how the process is handled and explained. This becomes even more relevant as support increasingly moves toward self service and AI assisted channels, where service quality depends not only on whether the channel exists, but also on whether the information is clear and the process makes sense from the user side [20], [21]. In small startups, repeated minor disruptions in these areas should not be treated as trivial, because they are often the points where wider digital transformation risks begin to build [25], [26].

Table 17. Minimum components of a one-page XLA based on priority touchpoints

Section	Minimum content
Identity	Startup/code, period, review owner, service scope (SSO/identity and support)
SLA / operational indicators (optional)	Uptime, response time, resolution time (if available)
Minimal XLA signals	Three rows for TP2, TP4, TP5 including: target dimension, number of events, % Low (score 1–2), one-sentence note
Top pain points in the current period	Top three based on the highest % Low (tie breaker: number of events), complemented with the most frequent moments of truth theme
Minimum narrative evidence	One to two short sentences for each priority (based on interview themes)
Review decision	Selected pain point to address or monitor, owner, next review date

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3.10. Theoretical and Methodological Contributions

The contributions of this study become clearer when placed directly against what prior work has and has not addressed. ITSM research has established that SLA-centric approaches are effective for operational control but tend to leave experience-level friction undetected [14]. What that body of work has not done is offer a practical measurement framework that small organizations can actually use to close that gap at the touchpoint level. This study does not just confirm that the gap exists, it demonstrates a concrete way to measure it using a minimal instrument, map it to specific interaction points, and translate the results into a priority list that a lean team can act on without specialized ITSM expertise. Employee experience research has similarly shown that work quality is shaped by the quality of daily digital interactions rather than by general satisfaction levels [30], [31], [32], [33], [49], [50], but that literature has largely stayed at the conceptual level when it comes to internal IT services specifically. The touchpoint-based XLA used here operationalizes that insight in a domain and organizational scale where it had not been applied before. Research on self-service and AI-assisted support has pointed out that more channels do not automatically produce better experiences [20], [21], yet it has focused mainly on external customer-facing services. The findings here extend that argument into internal IT services in small startups, where the same dynamic plays out but under conditions of informal coordination, lean staffing, and high dependence on access services for daily work.

The methodological contribution is equally worth being direct about. Most experience measurement approaches in the ITSM and EX literature rely on periodic satisfaction surveys that ask users to reflect on their overall impression of a service. The event-based micro-survey design used in this study asks something fundamentally different, not how users feel about the service in general, but how a specific recent interaction felt at the moment it happened. That design choice is what makes it possible to produce dimension-level scores that are tied to identifiable touchpoints rather than to a vague aggregate impression. The integration step adds another layer by combining those scores with interview-derived theme frequency, so that the priority list reflects both how severe a problem is and how persistently it appears in users' actual accounts of their experience. This is a more transparent basis for prioritization than either signal could provide alone, and it is replicable by other small organizations using the same six-touchpoint structure and ten-item instrument described in this paper.

Together these contributions are summarized in Table 18. The theoretical contribution is showing where and why experience debt accumulates in internal IT services in a way that extends rather than merely confirms existing ITSM and EX frameworks. The methodological contribution is demonstrating a lightweight, mixed-method approach that is specific enough to be reproducible and simple enough to be sustainable for organizations without dedicated service management resources. The empirical contribution is grounding both in three real cases from Jakarta's EdTech startup context, where similar quantitative patterns coexist with meaningfully different qualitative narratives, a finding that itself adds something to the conversation about how to interpret cross-case consistency in descriptive mixed-method research.

Table 18. Summary of the theoretical, methodological, and empirical contributions of the paper

Contribution	Core idea	Where it appears
Minimal XLA for internal services based on touchpoints	Shows that internal service experience becomes clearer when measured per touchpoint (TP1–TP6), rather than as general satisfaction	Touchpoint score map: Tables 3–5
Location of friction consistent across startups	Friction most often concentrates at TP2 (access issues) as well as TP4 (access rights) and TP5 (support), rather than routine access	Cross-startup priorities: Table 13; pain point summary: Table 9
Dimensions most problematic at each touchpoint	TP2 most often shows problems in information clarity, process ease, and resolution confidence; TP4–TP5 most often show problems in fairness	Cross-startup priorities: Table 13; interview themes: Table 12
Method for combining quantitative scores and interviews into priorities	Integrates quantitative results and moments of truth themes into a priority list that can be used for service review	Priority synthesis: Tables 12–13
Evidence across three EdTech cases in Jakarta	Shows recurring patterns across three startups, while moments of truth narratives explain different forms of friction at the same touchpoint	Moments of truth themes: Table 12; explanation of touchpoint roles: Table 16

3.11. Limitations and Future Research

This study has three limitations. First, the data only comes from three small EdTech startups in Jakarta, so the findings are more suitable as a description of organizations with lean teams, fast work rhythms, informal coordination, and heavy reliance on access services and internal support. The results cannot be directly applied to large companies or other sectors with significantly different working methods. Second, the study deliberately narrowed its focus to SSO or identity-based access and related internal support, so issues with other internal services such as devices, office networks, email, LMS, or HR systems were not discussed. Third, the quantitative data is descriptive and the survey is event-based, so responses are entered at the point of contact and when users choose to respond. This method is lightweight and practical, but it has the potential for bias, for example, because people are more inclined to fill out the survey when they are frustrated, or only respond after the problem has been resolved.

Future research recommendations may consider other internal services frequently used by employees, such as office WiFi or internal learning systems, to see whether the source of the problem still arises frequently during recovery and support, or whether it lies elsewhere in the service flow. Such measurements can also be repeated several times in different periods so that changes in the most problematic areas can be seen more clearly. This is in line with previous studies showing that technological stress and digital work experiences can change according to work situations, rather than remaining constant [10], [11], [12]. Subsequent research could also compare conditions before and after improvements are made at the most problematic touchpoints, such as TP2 or TP5, and then see whether experience scores and crucial moments have actually improved. This is important because problems in digital transformation often arise from small, recurring disruptions, while people's willingness to support change is also greatly influenced by the digital experiences they encounter in their daily work [25], [26].

4. CONCLUSION

This study shows that a simple touchpoint based XLA can help make hidden service problems easier to see. In many small internal IT services, SLA numbers can show whether the service is running or whether a target was met, but they often miss the part that users actually feel. That is where this study adds something useful, especially for small EdTech startups that do not have large teams or complex systems. In the three Jakarta startups, routine access was mostly fine. The bigger problems appeared in more difficult moments, especially when users suddenly lost access at TP2, or when they had to ask for

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permission or support at TP4 and TP5. At TP2, the issue was not only that access failed. What made the experience worse was that users often did not know what was happening, did not know what they should do next, and did not feel sure the problem was really over. At TP4 and TP5, the main problem was different. Users often felt stuck in a process they could not see. They had to wait, sometimes explain the same problem again, and often had no clear idea where their request stood. The priority list in this study becomes convincing because the same weak points appeared not only in the survey scores, but also in the interview stories across all three startups. From that same pattern, the study produced a one page XLA template. This is the most practical result of the study because it gives small teams a simple way to notice and discuss parts of the service experience that normal operational monitoring usually does not show. At the same time, these findings still come from one service area and one type of organisational setting, so whether the same pattern also appears in other contexts still needs to be examined in future research.

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