



What the SLA Text Leaves Open: Service Level Agreements and a Ground Handling Provider's Internal Register

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ABSTRACT	Original Research Article
Airlines govern outsourced ground handling through service level agreements (SLAs), but little is known about how the standards a provider records internally correspond to the contract documents it holds. This exploratory document analysis compares 17 SLA texts, held by one ground handling provider as working copies, with the provider's internal SLA register, which records a threshold and a compliance target for up to 24 key performance indicators per carrier. Register entries for 14 carriers (309 cells) were classified against the text, and seven measurement and sanction provisions were coded for every text. Of 244 recorded thresholds, 82 had no counterpart in the examined text and 22 were referred to documents that were not examined; where the text set a value for the same element, the register differed in 23 of 134 cases (17.2%), with no consistent direction. A compliance target appeared only in the register in 166 of 289 cases. Entries recorded as not measured concentrated in aggregate rates, which accounted for 33 of 45 such entries. Eight texts assigned the computation of punctuality to no party and ten gave no procedure for disputing a reading. Because the main bodies of the ground handling agreements, later amendments and other referred documents could not be examined, the discrepancies are documentary: the material cannot separate whether they reflect the provider's own standards, unexamined documents, amendments or recording errors. The study proposes that providers record the source and version of every register value and that each contracted indicator state its data source, computing party and dispute route. Keywords: service level agreement, ground handling, incomplete contracts, logistics outsourcing, performance measurement, management control, aviation safety.	Article History Received: 07-08-2026 Accepted: 01-10-2026 Published: 14-10-2026
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1. INTRODUCTION

The aircraft turnaround is a short and tightly coupled logistics process. Within a scheduled ground time, passengers and baggage must be processed, cargo and mail loaded, the cabin cleaned and the load documentation closed, and a late activity propagates directly into departure delay (Tuduriu *et al.*, 2025; Wu & Caves, 2004). Many airlines do not perform these activities themselves. Ground handling is among the functions that legacy carriers outsource most frequently (Rieple & Helm, 2008), and the opening of the European market under Council Directive 96/67/EC widened supplier choice without settling how service quality would be secured (Council of the European Union, 1996; Patriarca *et al.*, 2016; Soames, 1997). The governance choice matters operationally, since self-handling and

outsourced handling interact with airline business models in shaping departure punctuality (Lapçın, 2026).

Once handling is outsourced, the airline controls a critical stage of its own service chain through a contract. The International Air Transport Association (IATA) Standard Ground Handling Agreement (SGHA) fixes the legal frame, and a service level agreement (SLA) states what is to be delivered, by when, and what follows when a standard is missed; the Airport Handling Manual chapter AHM 803 offers an industry template (International Air Transport Association, 2026). In supply chain terms, the SLA is a performance contract for a logistics service (Selviaridis & Norrman, 2014; Selviaridis & Wynstra, 2015), and a recent review lists the influence of contracting on provider effectiveness

among the open questions of logistics outsourcing research (Abbasi *et al.*, 2024).

Like most contracts, SLAs are incomplete. They cannot anticipate every operational contingency, and parties may leave terms open deliberately (Anderson & Dekker, 2005). Research on ground handling has examined performance measurement (Bezerra & Gomes, 2016; Kutvonen *et al.*, 2010; Schmidberger *et al.*, 2009), airlines' perceptions of handling quality (Yaşar & Özdemir, 2022), contract duration (Erdoğan, 2019), resource dependence (Ertek & Taşcı, 2026) and stakeholder views of contract effectiveness (Tuwa & Nyaronga, 2025), but not what SLA texts leave open. The provider is where open terms meet operations. It must schedule staff and equipment against a definite standard for every flight, whether or not the contract states one. How the standards a provider records relate to the standards in its contracts is therefore a question about the documentary basis of the service level, and it has not been examined with contract documents. The question is also practical for managers on both sides: a standard that exists only in the provider's records cannot be enforced by the airline, and a standard that exists only in the contract may never be staffed for. Sections 1.1 to 1.3 review the literature on which the analysis draws, and Section 1.4 states the objectives, research questions and expectations.

1.1. Service Level Agreements as Incomplete Performance Contracts

Transaction cost economics treats contracts as necessarily incomplete, because boundedly rational parties cannot foresee and write down every contingency (Williamson, 1985). Incomplete contract theory adds that terms are also left out when they cannot be verified by a third party, even where the parties themselves could describe them (Hart & Moore, 1999). Verifiability is the hinge for the present study: a contracted standard that no party measures, or whose reading no party is entitled to settle, cannot be enforced whatever the text says.

SLAs entered the management literature through information technology outsourcing, where well specified agreements were found to support rather than replace relational governance (Goo *et al.*, 2009), and formal contracts and relational governance were shown to operate as complements (Poppo & Zenger, 2002). Anderson and Dekker (2005) treated contract content as a management control choice and showed that contracts are left incomplete in ways that reflect transaction characteristics. Mayer and Argyres (2004) found that firms learn to contract over repeated agreements, adding provisions after problems arise rather than designing complete contracts in advance. In logistics and service supply chains, the same instruments appear as performance contracts in which payment or penalties are tied to measured outputs. Reviews emphasise three design problems: how performance is specified and evaluated, how incentives shape supplier behaviour and

how risk is shared (Selviaridis & Wynstra, 2015). Providers accept performance risk more readily when outcomes can be attributed to them and when the measurement process is perceived as fair (Selviaridis & Norrman, 2014).

Aviation research has examined these relationships mainly through transaction cost reasoning, covering vertical governance between airlines and airports (Fuhr & Beckers, 2006), the liberalisation of ramp handling (Fuhr, 2009), the duration of handling agreements (Erdoğan, 2019) and the coexistence of contract based and goodwill-based trust (Lapçın & Taşcı, 2024). These studies establish that the contract matters. They do not examine what the contract leaves open, or how the open parts are filled when the service is delivered.

1.2. Measurement and Modes of Control

A contracted target becomes a working control only when it is embedded in a measurement system. Neely *et al.* (1995) argued that a measure is usable only when its purpose, formula, data source, frequency and owner are defined, and later work found that the consistency of a performance management system depends on defining every indicator with the same set of attributes, including who collects the data and from where (Zavadsky & Hladlovsky, 2014). In ground handling, Schmidberger *et al.* (2009) built a process based benchmarking system for European hubs, Kutvonen *et al.* (2010) proposed a stakeholder oriented framework for apron performance, and Patriarca *et al.* (2016) examined handler variability against airport quality standards; airport measurement research more broadly reports fragmented systems (Bezerra & Gomes, 2016).

Organisational control theory adds a distinction that is useful here. Ouchi (1979) argued that output control is feasible when outputs can be measured reliably, whereas behaviour or process control is feasible when the transformation process is known, and that the choice between them follows from these two conditions. Eisenhardt (1985) linked the same choice to the information systems available to the principal. A turnaround consists of activities whose completion can be timed against a scheduled or actual movement, such as loading completed or first bag on the belt, and of outcomes that are aggregated over many flights or depend on another party's records, such as on time performance or the mishandled baggage rate. The theory suggests that a provider will find the first kind easier to control through records kept on each flight, and will rely more on periodic compilation or process checks for the second.

1.3. Safety in Performance Contracts

The multitask principal and agent model predicts that strong incentives on easily observed tasks divert effort from tasks that are harder to observe

(Holmström & Milgrom, 1991), the pattern Kerr (1975) described as rewarding A while hoping for B. Punctuality is observed flight by flight through movement messages and delay codes, whereas safety is observed largely through rare events. Reason (1997) framed the resulting tension as one between production and protection, and studies of ramp work identify time pressure and the focus on punctual departure as human factors concerns (Balk & Bossenbroek, 2010; Ek & Akselsson, 2007; Wenner & Drury, 2000). Safety management doctrine distinguishes lagging indicators, which count occurrences and outcomes, from leading indicators, which track the processes intended to prevent them (International Civil Aviation Organization [ICAO], 2018). How SLA texts express safety in these terms has not been examined.

1.4. Objectives, Research Questions and Expectations

This exploratory study addresses that question for one ground handling provider. It compares 17 SLA texts with the provider's internal SLA register, in which the provider records, for each carrier, a threshold and a compliance target for each indicator. Four research questions guide the analysis. RQ1: What do the SLA texts specify, and what do they leave open? RQ2: How do the register entries relate to the texts? RQ3: Which indicators does the register record as not measured, and to whom do the texts assign measurement and dispute authority? RQ4: How do the texts price delay and safety?

Four descriptive expectations follow. E1: SLA texts leave many operational standards unspecified, and the provider's register contains values for which the texts give none. E2: The register records indicators with a turnaround timestamp more completely than indicators that must be compiled over many flights or depend on another party's records. E3: The authority to compute outcome indicators such as punctuality rests with the airline or is not assigned at all. E4: Safety appears in the texts mainly as consequences of discrete events and as liability for damage rather than as leading indicators. The expectations are descriptive and are not tested statistically; Section 4.1 reports how far the documents bear them out.

The novelty of the study lies in its material: to the author's knowledge, no published study has compared the SLA texts held by a ground handling provider with the standards the same provider records for the same carriers. Its contributions are documentary and methodological. First, it documents, cell by cell, where a provider's register and its SLA texts coincide, where the register holds values the examined texts do not contain and where the two differ, with an explicit denominator for each comparison. Second, it sets out the competing explanations for such discrepancies, namely the provider's own standards, documents outside the examined texts, later amendments, recording errors and template defaults, and specifies the evidence needed to separate them. Third, it shows that entries recorded as not

measured concentrate in aggregate rates, and that most texts either give the airline the authority to compute punctuality or assign it to nobody, and seldom provide for disputes. Because the evidence comes from one provider and a convenience set of documents, the findings describe a rarely accessible set of documents and are not estimates for the industry. Section 2 describes the material and coding, Section 3 reports the results, Section 4 sets the results against the expectations and derives propositions for further research, and Section 5 answers the research questions.

2. MATERIALS AND METHODS

2.1. Setting and Sources

The study is an embedded case of a large ground handling provider operating across a network of airports in one national market. Three sources were used. The first is the set of SLA texts the provider made available for the study. This is a convenience set: the size of the provider's full contract portfolio was not enumerated, so the corpus cannot be treated as complete or representative of it. It comprises 18 agreements, of which the text of 17 could be analysed, covering 18 carrier brands because one agreement applies separate regimes to two brands of the same group. The texts were signed or dated between 2014 and 2025 (two are undated), run from 3 to 27 pages and include network, low cost, leisure and charter carriers based in the home market, the Gulf region, Europe, East Asia and North Africa (Table 1). They are SLA annexes or appendices to the SGHA; the main bodies of the SGHA annexes and station instructions were not part of the material. The texts are the copies held in the provider's files. For five agreements the copy on file is unsigned, undated or incomplete; whether a fully executed version exists was not verified, so the texts are treated as the provider's working copies rather than as executed contracts. Table 1 traces the flow from the agreements made available to the carriers matched with the register.

The second source is the provider's SLA register. It exists in two templates. Template A lists 24 key performance indicator (KPI) fields for 15 carriers, giving 360 cells; for each cell the provider records a threshold and a compliance target, or states that the indicator is not measured in practice. Template B, a later extract, lists 15 fields for five further carriers (75 cells). Three of the five are carriers whose texts are in the corpus; two have no text in the corpus. Both templates were obtained in 2026, so the register reflects the values recorded in 2026, whereas the texts date from 2014 to 2025. The third source is a statement by the provider's quality function on how the register indicators are followed: milestones are time stamped in real time by staff on tablet devices (for example cleaning started, cleaning completed, loading started) and aircraft movement times are taken from Aircraft Communications Addressing and Reporting System (ACARS) data, while indicators recorded as not measured are followed through process based audits;

airline representatives and the provider's station supervisors are present in the operation. This statement was not verified with audit forms or records. It is reported to interpret the entries recorded as not measured, and no result of the study depends on it.

2.2. Matching Register Entries to Contract Text

Two terms are used throughout. A threshold is the limit the register sets for a single occurrence, usually a time in minutes relative to a reference event; a compliance target is the percentage of occurrences that should meet the threshold. The register does not state the period or denominator of a target, nor whether it is a contractual acceptance level, an internal target, a reporting threshold or a template default, so targets are compared with the text only for presence and equality. For 14 carriers, register entries could be compared with the SLA text: 11 carriers in template A (264 cells) and the three template B carriers with a text (45 cells), 309 cells in all. Three further carriers, covered by two agreements, were not matched because their texts had been coded at clause level in an earlier stage of the study and were not available again when the field matching was carried out; the carrier whose text was not available and the two template B carriers without a text were not matched either. Each cell was assigned to one class according to the register status and the SLA text. For recorded thresholds, the classes were: matched (the same threshold and reference event); partly matched (the register takes one of several values in the text, or one end of a range); value differs (the text sets a different value for the same element); different element (the register takes a neighbouring activity, such as gate opening for gate staff attendance); referred (the text refers the item to another document, such as the airline's ground handling manual, the SGHA annex or a station scorecard, which was not examined); and no counterpart (the text neither sets nor refers the item). For cells recorded as not measured, the class distinguished whether the text contains the indicator. For empty cells, it distinguished whether the text contains content for the field. The compliance target in each recorded or flagged cell was compared with the text in the same way (same, differs, register only, or delegated by the text to a station scorecard outside the contract). Appendix A gives the decision rule for each class.

Because only the SLA annexes were read, no counterpart means that the examined text is silent, not that no document anywhere sets the value. The provider's quality function stated that register values without a counterpart are the provider's own time standards. This statement is reported but could not be verified from the documents, and the classification does not rely on it. No version control was possible. The register was obtained in 2026 and the texts are dated from 2014 to 2025, and any text may have been amended or replaced after it was signed. Differences between register and text are therefore reported as documentary discrepancies whose cause cannot be determined from the material.

2.3. Clause Level Coding

All 17 texts were coded with a codebook of 46 variables covering identity and form, the inventory of obligations, measurement ownership, sanction architecture, the position of safety and drafting integrity. Seven key fields were coded for every text: which party computes punctuality; which data are used to attribute delay; how disputes over readings are resolved; the form of the delay sanction; the form of consequences for safety related events; their scope; and whether the provider is obliged to run its own measurement. Although these fields record what the text states, coding required judgement in several places: whether a clause addresses the same activity as a register field or a neighbouring one, whether a reference to another document is explicit enough to count as a referral, whether a sanction is a penalty or a liability transfer, whether an item concerns safety or service, and whether an apparent conflict is a drafting defect or a feature of the copy on file. The decision rules for these judgements are given in Appendix A.

Four coding rules matter for the results. A penalty is a price reduction, fee waiver or fixed deduction triggered by a performance failure, independent of the loss incurred; a liability transfer makes the provider bear the actual cost of damage, loss, fines or claims; the two were coded separately. A safety related item concerns damage to aircraft or unit load devices (ULDs), loading or load control errors, dangerous goods or safety inspection findings; readiness items, such as equipment not ready at the stand, and baggage service failures were coded as service items. Following safety management doctrine (ICAO, 2018), safety indicators expressed as rates or targets were coded as leading when they track preventive activity, such as reporting or audits, and as lagging when they count occurrences. Drafting defects were recorded only where visible in the copy on file and were divided into internal inconsistencies, incomplete or corrupted content, and copies that were unsigned, undated or incomplete; struck through clauses were treated as possible amendments and not counted as defects. A provider measurement duty was coded only where the text states one; no text contained an explicit exemption, so all other texts were coded as stating none.

Coding followed the explicit wording of the text (Krippendorff, 2018) and was carried out by one coder. The author extracted the text into the codebook, checked every value against the source document and made all coding decisions; for the first five agreements, a quality manager of the provider assisted in this check. This check verified extracted values against the documents and was not independent coding. No independent second coding was performed, so no reliability coefficient is reported.

2.4. Analysis

The analysis is descriptive. Register cells are not independent observations: the register is a single

provider wide instrument, and a pattern repeated across carriers may reflect one design decision. Counts are therefore reported without statistical tests. Counts and Figure 1 were produced with Python 3.13 and matplotlib 3.11. To organise the description, each indicator was assigned to one of four forms according to the event to which the register ties its value. Turnaround milestones (15 indicators) are timed against a scheduled or actual aircraft movement or against another turnaround event; they include staff or equipment ready at the stand or gate, because the register ties readiness to the aircraft's arrival or departure. Attendance events (2) require staff presence at a passenger facing point, the terminal arrival area or the baggage carousel, without reference to an aircraft movement. Aggregate rates (4) are outcome or compliance rates computed over many flights or records: on time performance, the mishandled baggage rate, staff training compliance and passenger satisfaction. Process and resourcing standards (3) are durations per passenger and counter provisions. The grouping is an analytic choice rather than a property of the register, and Section 3.5 reports how sensitive the main pattern is to it.

2.5. Confidentiality, Ethics and Use of Generative AI

Carrier, provider, station and individual names are omitted. Agreements are coded K01 to K18 and brands C01 to C21; no verbatim clause, threshold text or absolute monetary amount is reproduced. The provider

authorised access to the documents and their anonymised use for research and publication. The study analyses organisational documents and involves no human participants or personal data.

Generative AI tools (Anthropic Claude and OpenAI ChatGPT) were used only for English language editing and for assistance in preparing the draft text. All data extraction, coding, counts and analyses were carried out by the author, who is responsible for all interpretations and conclusions.

3. RESULTS

3.1. What the SLA Texts Specify

The texts varied in form (Table 1). Three followed AHM 803 explicitly, one combined an SGHA reference with a table of target percentages, four were organised as tables of standards with target percentages, and nine used the airline's own format. Nine texts attached a compliance percentage to their service standards and two did so for a few items only; two set percentages only for passenger surveys; three set none; and one referred all targets to a station scorecard published by the airline outside the contract, which could change from month to month. Most texts mixed timed standards with staffing rules, equipment lists and references to the airline's manuals.

Table 1. Characteristics of the 17 SLA texts and the register entries

Characteristic	Category	n
Sample flow	Agreements made available / text analysed / text not available	18 / 17 / 1
	Carrier brands covered by the analysed texts	18
Signed or dated	2014 to 2019 / 2021 to 2023 / 2024 to 2025 / undated	4 / 8 / 3 / 2
Length	Pages, shortest to longest text	3 to 27
Template form	AHM 803, explicit reference	3
	SGHA reference with target percentage table	1
	Table of standards with target percentages	4
	Airline's own format	9
Compliance percentages in the text	For service standards / for a few items only	9 / 2
	For passenger surveys only / none	2 / 3
	Delegated to an airline station scorecard	1
Register, template A	Carriers; fields; cells	15; 24; 360
Register, template B	Carriers; fields; cells	5; 15; 75
Register carriers	Template A / template B	15 / 5
Matched with SLA text	Carriers (cells): template A / template B	11 (264) / 3 (45)
Register carriers not matched	Text coded earlier, not available again / text not available / no text	3 / 1 / 2
Text brands not in register	Carrier brands	1

Note. Register carriers: 14 matched + 3 + 1 + 2 not matched = 20. Text brands: 14 matched + 3 coded earlier + 1 not in register = 18. Dates are taken from the texts; file dates were not used. SLA: service level agreement; KPI: key performance indicator; AHM: Airport Handling Manual; SGHA: Standard Ground Handling Agreement.

3.2. The Provider's Register

In template A, 272 of the 360 cells (75.6%) had a recorded threshold, 61 (16.9%) were recorded as not measured in practice and 27 (7.5%) were empty. The not

measured entries fell in six indicators: on time performance and staff training compliance for all 15 carriers, the mishandled baggage rate for 14, meeting arriving passengers at the terminal for 11, staff at the

arrival carousel for 5 and passenger satisfaction for one. The register attached a compliance target to every flagged cell and to 26 of the 27 empty cells; among recorded thresholds, the target was 95% in 199 cells (73.2%) and 100% in 51.

Template B is narrower. Its 15 fields are departure and arrival milestones together with check in time per passenger. It omits on time performance, the mishandled baggage rate, staff training, the two attendance events, counter numbers and passenger satisfaction, and also wheelchair assistance, which is timed. Four of its 75 cells were recorded as not measured, three for check in time per passenger and one for boarding completion, both of which can be timed, and 48 targets (64.0%) were 95%. The later template thus concentrates on timed milestones, but timing alone does not decide which indicators are kept or recorded as measured.

3.3. Register Entries Compared with the Contract Text

Table 2 compares the 309 matched cells with the SLA texts. Of 244 recorded thresholds, 101 (41.4%) matched the text and 10 (4.1%) matched it partly. The text set a different value for the same element in 23 cases (9.4%), and in 6 (2.5%) the register had taken a neighbouring activity. In 22 cases (9.0%), the text referred the item to another document: one agreement referred all standards and targets to the airline's station scorecard, another referred three items to the airline's ground handling manual, and a third referred counter allocation to the SGHA annex. In 82 cases (33.6%), the text neither set nor referred a threshold for the indicator. Where the text set a threshold for the same element (134 cases: matched, partly matched or differing), the register value differed in 23 (17.2%). Of these 23, 18 could be compared in direction, the register being stricter in 10 and less strict in 8; the other 5 used a different reference event. The 6 cases with a neighbouring activity are excluded from this comparison. The differences have no consistent direction.

Table 2. Register entries compared with the SLA text, by indicator form (14 carriers, 309 cells)

Register status and class	Milestones	Attendance	Rates	Process	Total, n (%)
Recorded threshold	205	13	1	25	244 (100)
Matched	86	2	1	12	101 (41.4)
Partly matched	9	0	0	1	10 (4.1)
Value differs	20	3	0	0	23 (9.4)
Different element	6	0	0	0	6 (2.5)
Referred to another document	17	1	0	4	22 (9.0)
No counterpart in examined text	67	7	0	8	82 (33.6)
Recorded as not measured	1	9	33	2	45 (100)
Indicator contained in text	0	4	29	0	33 (73.3)
Indicator not in text	1	5	4	2	12 (26.7)
Empty	1	0	10	9	20 (100)
Also empty in text	1	0	6	5	12 (60.0)
Content in text, not in register	0	0	4	4	8 (40.0)

Note. Milestones: KPIs 1, 2, 4 to 9, 15 to 20 and 24; attendance: 12 and 13; rates: 3, 10, 11 and 23; process and resourcing: 14, 21 and 22. Template B carriers contribute 15 fields each. Percentages refer to the subtotal of each register status. Counts are descriptive; cells are not independent observations. Referred: the text refers the item to the airline's ground handling manual, the SGHA annex or a station scorecard, which were not examined.



Figure 1. Register entries compared with the SLA text for each indicator (number of carriers, 14 carriers). Template B carriers have no entries for KPIs 3, 10 to 13 and 21 to 24.

Thresholds without a counterpart occurred among milestones (67 of 205), attendance events (7 of 13) and process standards (8 of 25) (Figure 1). They were most frequent for the last priority bag and the last transfer bag on the belt (10 of 14 carriers each), ramp staff ready at the stand (7 of 14), staff at the arrival carousel (7 of 9), wheelchair assistance (7 of 11), boarding completion (6 of 13) and check in time per passenger (6 of 12). Full matches were most frequent for the opening of check in, first bag and last bag on the belt (10 of 14 each). Across carriers, thresholds without a counterpart ranged from none to 11 of 18. They occurred in older and recent texts alike, from 3 of 20 in a text dated 2014 to 11 of 18 in a

text dated 2022; this does not exclude amendment, since a text of any date may have been amended.

Of the 45 cells recorded as not measured, 33 (73.3%) concerned an indicator contained in the text, most often on time performance (11 carriers), the mishandled baggage rate (10) and staff training (8). The other 12 concerned indicators the text did not contain. Of the 20 empty cells that could be checked, 12 were also empty in the text, but 8 corresponded to contractual content the register did not record: counter allocation rules in four cases and passenger satisfaction surveys or ratings in four.

3.4. Compliance Targets

Compliance targets diverged from the text more than thresholds did (Table 3). Of 289 recorded or flagged cells, the register target equalled the target in the text in 76 (26.3%) and differed in 24 (8.3%). In 166 (57.4%), the text set no compliance target for the indicator and the target appeared only in the register, in most cases at 95%;

in 23 (8.0%) the text delegated targets to the airline's station scorecard. Where both the register and the text stated a target (100 cells), the percentages differed in 24 (24.0%). The pattern held for every form of indicator, including the turnaround milestones, for which the texts most often specified a time but not a percentage.

Table 3. Compliance targets in the register compared with the SLA text (recorded and flagged cells)

Indicator form	Cells	Same as text	Differs from text	Register only	Delegated to station scorecard
Milestones	206	64	11	116	15
Attendance	22	2	6	12	2
Rates	34	4	5	22	3
Process	27	6	2	16	3
Total, n (%)	289	76 (26.3)	24 (8.3)	166 (57.4)	23 (8.0)

Note. Register only: the text sets no compliance percentage for the indicator. Delegated: the text refers targets to a station scorecard published by the airline outside the contract. Forms as in Table 2.

3.5. Measurement, Attribution and Disputes

Table 4 summarises the key fields for the 17 texts. Seven texts gave the airline the computation of punctuality, four of them stating explicitly that the carrier measures the indicators, two provided for joint determination, and eight assigned it to no party. Delay was attributed from airline records or delay codes in ten texts, from movement messages in two and through joint

reconciliation in two; three named no data source. Ten texts contained no procedure for disputing a reading, five required mutual agreement and two gave the airline the final reading subject to an appeal or fairness provision. Baggage delivery times were referenced to terminal operator records, airline audits or airport reports where a source was named.

Table 4. Measurement, attribution, dispute and sanction provisions in the 17 SLA texts

Text	Computes punctuality	Delay attribution data	Dispute procedure	Delay sanction	Safety consequence	Provider measurement duty
K01	Not specified	Not specified	Not specified	None	None	None stated
K02	Not specified	Airline codes	Not specified	None	None	None stated
K03	Joint	Joint reconciliation	Mutual agreement	Graded	Penalty liability	and None stated
K04	Airline	Airline codes	Not specified	None	Penalty liability	and None stated
K05	Not specified	Not specified	Not specified	Graded	None	None stated
K06	Airline	Airline records	Airline final, appeal	Graded with bonus	Penalty liability	and None stated
K07	Airline	Airline codes	Not specified	None	Rates or targets only	Yes, process check
K08	Not specified	Movement messages	Not specified	Other	None	None stated
K09	Airline	Airline codes	Mutual agreement	Graded	Penalty liability	and Yes, form not stated
K10	Not specified	Airline codes	Not specified	Other	Liability only	Yes, process check
K11	Airline	Airline codes	Mutual agreement	Graded	None	None stated
K12	Airline	Airline codes	Not specified	Other	Rates or targets only	None stated
K13	Not specified	Not specified	Not specified	Graded	Penalty liability	and None stated
K14	Airline	Airline codes	Not specified	Graded	None	None stated
K16	Not specified	Movement messages	Airline final, fairness	Graded with bonus	Penalty liability	and None stated
K17	Joint	Airline codes	Mutual agreement	Graded	Liability only	None stated

K18	Not specified	Joint reconciliation	Mutual agreement	Graded	Penalty liability	and	None stated
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Note. Not specified: the text contains no provision on the point. None (delay sanction, safety consequence): the text attaches no sanction. None stated (provider measurement duty): no duty is stated; no text contained an explicit exemption. Airline codes: airline records or delay codes. Other: delay bands without a stated consequence (K08), a single tier with a bonus (K10) or a reference to sanctions in the SGHA annex (K12). Safety consequence refers to safety related events as defined in Section 2.3; penalty: fee waiver or deduction; liability: transfer of actual costs. The text of K15 was not available.

Three texts obliged the provider to run its own measurement. Two specified its form, and in both it was a process check rather than a time series: a minimum of two turnaround inspections per season, divided between arrivals and departures, and regular flight quality checks of passenger handling and load control made available to the airline every month. The third required a system to measure compliance without specifying its form. In the register, 33 of the 45 entries recorded as not measured concerned aggregate rates and 9 concerned attendance events, which the provider's system does not record with a per flight timestamp; the provider reports that it follows these indicators through process audits. The pattern does not depend on the grouping: if the two attendance events were grouped with milestones, rates would still account for 33 of the 45 entries, and 33 of the 44 matched rate cells are recorded as not measured, against 1 of the 207 milestone cells. The register does not show whether such audits take place, and several of these indicators could be computed from records, such as training files or baggage irregularity reports.

3.6. Pricing of Delay and Safety

Ten texts priced delay through graded reductions of the handling charge, two of them combined with a bonus for recovered delay; the first tier began between 4 and 15 minutes, and the highest tier ranged from 20% of the charge to a full fee waiver. Four texts had no delay sanction, and three used another form: delay bands without a stated consequence, a single tier with a bonus, or a reference to sanctions set in the SGHA annex.

Five texts capped penalties, per flight, per period or per year.

Eleven texts contained an explicit statement that service standards must not compromise safety. Seven attached a penalty or fee deduction to safety related events, typically a fee waiver for aircraft damage caused by the provider, together with liability for actual costs; two transferred liability without a penalty; two expressed safety only as rates or zero targets; and six attached no consequence to safety events. Five texts, including the two in which rates were the only safety provision, expressed safety as rates or targets, mostly counts of damage, loading errors or occurrences, which are lagging indicators; only one also set leading indicators, a reporting rate and an audit rate. Ten texts showed a drafting defect: an internal inconsistency, such as figures that differ between two sections (seven texts), or incomplete or corrupted content, such as missing penalty tiers, numbered items or protocols (five). In five texts the copy on file was unsigned, undated or incomplete. Struck through clauses in two texts were not counted.

4. DISCUSSION

4.1. Findings Against the Expectations

Table 5 sets the results against the four expectations of Section 1.4. Three are borne out by the documents and one only in part. The partial case matters for interpretation: timing makes an indicator easier to record, but the later register template shows that it does not by itself decide what the provider keeps or records as measured.

Table 5. Results against the expectations

Expectation	Evidence	Assessment
E1	82 of 244 recorded thresholds and 166 of 289 compliance targets have no counterpart in the examined text (Tables 2 and 3)	Supported
E2	33 of 45 entries recorded as not measured are aggregate rates and 9 attendance events; template B records two timed indicators as not measured and omits a third (Sections 3.2 and 3.5)	Partly supported
E3	Punctuality is computed by the airline in 7 texts and by no party in 8; joint determination in 2 (Table 4)	Supported
E4	Safety consequences take the form of fee waivers and liability; only one text sets leading indicators (Section 3.6)	Supported

Note. The expectations are descriptive; the assessment summarises document counts and is not a statistical test.

4.2. Standards Outside the Contract Text

The central finding is documentary. Of 244 thresholds recorded by the provider, 82 have no counterpart in the SLA texts examined and 22 are referred to documents that were not examined; of 289

compliance targets, 166 appear only in the register. Where the text sets a threshold for the same element, the register differs in 23 of 134 cases, in both directions. Five explanations could produce these discrepancies: (a) the provider records standards of its own where the text is

silent; (b) the value is set in a document that was not examined, such as the main SGHA body, an airline manual or a station scorecard; (c) the text was amended after it was signed and the register follows the amendment; (d) a value was entered in error; or (e) the register template supplies a default, as the near uniform 95% target suggests. The material cannot separate these explanations. Doing so would require the full current contract chain for each carrier, including amendments, and the date and source of each register entry.

Incomplete contract theory explains why the distinction matters rather than which explanation holds. Contracts are left incomplete by necessity and by design (Anderson & Dekker, 2005; Williamson, 1985), parties fill gaps over repeated agreements (Mayer & Argyres, 2004), and a term is enforceable only if a third party can verify it (Hart & Moore, 1999). Under explanation (a), the register would complete the agreements unilaterally, with values neither party could enforce against the other; under (b) or (c), it would record agreed terms the annex does not show. The study therefore does not claim that the provider writes the service level. It shows that, from the documents a provider holds, it cannot be established which recorded values rest on agreement.

The meaning of a compliance target adds a further ambiguity. A 95% entry may be a contractual acceptance level, an internal target, a threshold for management intervention or a template default, and the register does not say which. A text may require an activity on every flight while the provider uses 95% as an internal trigger; the two need not conflict, but they cannot be compared without the period and denominator to which each applies. The reverse case also occurs: eight empty register fields correspond to content in the texts, so some contractual obligations are not recorded in the register examined.

4.3. What Not Measured Means

On the provider's account, the entries recorded as not measured do not mark indicators without control. They concentrate in aggregate rates (33 of 45) and attendance events (9), which the provider's system does not record with a per flight timestamp, and the provider reports that it follows them through process audits. This is consistent with Ouchi's (1979) distinction between output and process control, but the study does not establish it: the audits were not observed, and template B records two timed indicators as not measured and omits a third. Training compliance, the mishandled baggage rate and staff presence in the arrival hall could be measured from records or by observation; their absence from a time based register reflects how the register was designed, not a property of the indicators. The proposition that providers control untimed contract indicators through process audits rather than outcome records is therefore offered for testing with audit records.

Several elements of the measurement arrangement are left unstated in many texts. Eight texts assign the computation of punctuality to no party, three name no data source for delay attribution and ten contain no dispute procedure, while outcome indicators are often stated as compliance percentages. Punctuality illustrates the consequence. According to the provider, movement times are recorded for every flight; whether a delay counts against the provider, however, depends on delay code attribution, which the texts place with the airline or leave open. In Eisenhardt's (1985) terms, the verifiability of a contracted outcome depends on the information available to each party, and the texts seldom settle whose records govern the reading. In the terms of the performance contracting literature, attribution and the fairness of the reading, the conditions under which providers accept performance risk (Selviaridis & Norrman, 2014), are left to practice rather than to the contract. The attributes of a usable measure, its data source, formula and owner (Neely *et al.*, 1995; Zavadsky & Hiadlovsky, 2014), are the attributes the texts most often omit.

4.4. The Form of Safety Provisions

The texts express safety mainly through priority statements, fee waivers and liability for damage, and through lagging counts where rates appear at all, whereas delay is priced through graded schedules applied to every flight. This describes the form of the provisions only. It does not show that safety carries weaker incentives than punctuality: a single liability for aircraft damage may exceed many delay deductions, aviation regulation and the provider's safety management system apply whatever the SLA states, and the main SGHA body, which was not examined, may attach further consequences. What the texts largely lack is a contractual vocabulary for preventive safety work. Only one text set leading indicators, a reporting rate and an audit rate (ICAO, 2018), and the two texts that specified the form of provider measurement framed it as process audits, a form that could carry leading safety indicators as well.

4.5. Implications for Contract Design and Provider Practice

Four implications follow, the first directly from the findings. First, providers should record for every register value its source (contract clause, referred document, amendment or own standard), the version and date of that source and the date of entry, and should mark template defaults as such. With this information the five explanations in Section 4.2 could have been separated, and both parties could see which values rest on agreement. Second, each contracted indicator should state its reference event, the data source, the party that computes it, the reading that prevails and a time limit for disputes; for punctuality this means shared access to movement data and delay codes and a joint reconciliation step. Third, for indicators that are not timed per flight, such as rates, training compliance or staff presence, contracts should state the method of measurement,

whether computation from records, observation or audit, with its criteria and frequency, rather than a compliance percentage alone. Fourth, airlines and providers can reduce dispute costs by checking texts for conflicting figures, struck through clauses, missing tiers and blank signature fields before filing them.

4.6. Propositions for Further Research

Because the evidence comes from one provider, the study does not test relations; it offers three propositions that matched data from several providers could test. P1: The share of recorded values without a contractual counterpart is larger where the SLA follows the airline's own format than where it follows the AHM 803 template. P2: Disputes over delay penalties are more frequent where the text assigns the computation of punctuality to no party or gives no dispute route. P3: Providers control contract indicators that cannot be timed per flight through process audits rather than through outcome records, and the quality of those audits, not the register entry, determines whether the indicator is controlled.

4.7. Limitations

Seven limitations qualify the findings. First, the corpus is a convenience set of agreements that one provider in one national market made available; its full portfolio was not enumerated. Second, only the SLA annexes were read, five of them in copies that were unsigned, undated or incomplete; the main SGHA bodies, airline manuals, station scorecards and correspondence may set values classified here as referred or without counterpart. Third, no version control was possible, so amendments made after a text was dated may account for some discrepancies. Fourth, register entries were matched for 14 of 20 carriers. Fifth, classification involved judgement (Appendix A) and was performed by one coder; the check by a quality manager verified extracted values and was not independent coding, so no reliability coefficient is available. Sixth, the provider's statements that unmatched values are its own standards and that untimed indicators are followed through process audits were not verified. Seventh, the study shows what the register records, not that its values are used in rostering, performance assessment or invoicing, and it concerns documents rather than realised performance or enforcement. Matching the full contract chain, dated register entries, audit records and flight level data across several providers is the natural next step.

5. CONCLUSION

This study compared the SLA texts held by one ground handling provider with the values in its internal register. On RQ1, the texts specify timed standards for the main turnaround milestones but often leave compliance percentages, data sources and computing parties open, and several defer to documents outside the annex. On RQ2, 82 of 244 recorded thresholds and 166 of 289 compliance targets have no counterpart in the texts examined; where both set a threshold for the same

element the values differ in 23 of 134 cases, and where both state a target the percentages differ in 24 of 100. On RQ3, entries recorded as not measured concentrate in aggregate rates, and the texts leave the computation of punctuality to the airline or to no one and seldom provide for disputes. On RQ4, delay is priced flight by flight through graded schedules, whereas safety provisions take the form of fee waivers, liability and lagging counts.

These discrepancies are documentary, and their causes cannot be determined from the material. The practical finding is that neither party can tell from the register which values rest on agreement. Recording the source and version of every register value, and stating in the contract how each indicator is measured, by whom and on whose data, would make the service level traceable to its source.

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Declarations

Supplementary materials. The codebook (46 variables with dimensions and coding rules), the anonymised classification of the 309 matched register cells and the Python code that reproduces Tables 2 and 3 and Figure 1 are available from the corresponding author on reasonable request.

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Ethics statement. No ethics committee approval was required, because the study analysed organisational documents and involved no human participants or personal data. The provider authorised access to the documents and their anonymised use for research and publication (Section 2.5).

Data availability. The SLA texts and the register were obtained from the ground handling provider with permission for anonymised use only and cannot be shared, because they contain commercially sensitive terms and identify the contracting parties. The anonymised cell classification that supports Sections 3.3 and 3.4 is available from the corresponding author on reasonable request.

Use of generative AI. Generative AI tools were used only for language editing and draft preparation, as described in Section 2.5. The author reviewed and edited all output and takes full responsibility for the content of this article.

Conflict of interest. The author declares a professional affiliation with the organisation that provided the documents. A quality manager of the organisation assisted in checking coded values, and its quality

function described the control arrangements reported in Section 2.1. The organisation had no role in the design of the study, the analysis or interpretation of the data, the writing of the manuscript or the decision to publish the results. No commercial or financial interest in the findings is declared.

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Appendix A. Coding Decision Rules

Table A1. Decision rules for classifying register entries and coding SLA clauses

Decision	Rule
Same element	The text and the register refer to the same activity and the same reference event.
Different element	The register field names one activity and the text sets a value only for a neighbouring activity in the same phase (for example, gate opening for gate staff attendance).
Partly matched	The text gives several values (for example by aircraft type or station) or a range, and the register takes one of them or one end of the range.
Value differs	Same element, different value. Direction is recorded as stricter or less strict only where the reference event is the same; otherwise the case is counted as differing without a direction.
Referred	The text explicitly names another document (airline ground handling manual, SGHA annex or station scorecard) as the source of the standard for that item or for all items.
No counterpart	The text neither sets a value for the element nor refers it explicitly to another document.

Recorded as not measured	Assigned only where the register itself states that the indicator is not measured in practice; empty cells are classed separately.
Compliance target	Same: equal percentage in register and text. Differs: both state a percentage and the percentages differ. Register only: the text states no percentage for the indicator. Delegated: the text refers targets to a station scorecard outside the contract.
Penalty or liability	Penalty: price reduction, fee waiver or fixed deduction triggered by a failure, independent of the loss. Liability: the provider bears the actual cost of damage, loss, fines or claims. Coded separately.
Safety or service	Safety: damage to aircraft or ULDs, loading or load control errors, dangerous goods, safety inspection findings. Readiness items and baggage service failures are service items.
Leading or lagging	Leading: rates or targets for preventive activity such as reporting or audits. Lagging: counts of occurrences or outcomes.
Drafting defect	Recorded only where visible in the copy on file: internal inconsistency, or incomplete or corrupted content. Unsigned, undated or incomplete copies are recorded separately; struck through clauses are treated as possible amendments, not defects.
Provider measurement duty	Coded only where the text states a duty for the provider to measure its own performance.

Note. ULD: unit load device; SGHA: Standard Ground Handling Agreement.