



## **Responsiveness, reliability, and reclaim: A literature review on managing passenger satisfaction in airport baggage operations**

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### **ABSTRACT :**

This article develops an integrated framework of passenger satisfaction in airport baggage operations. The framework attempts to explain how responsiveness and reliability influence passenger satisfaction through Baggage Reclaim Process Efficiency, while recognising the role of risk assessment. Premised in the SERVQUAL model, the framework identifies responsiveness and reliability as essential dimensions of service quality. Responsiveness reflects prompt assistance, timely communication, and efficiently resolving baggage-related concerns. Reliability suggests the accurate, consistent, and dependable delivery of passengers' baggage. The proposed framework positions Baggage Reclaim Process Efficiency as a mediator through which Responsiveness and Reliability translate into passenger satisfaction. The framework is further supported by Expectation–Confirmation Theory that explains passenger satisfaction as a result of the comparison between expected and actual baggage reclaim experiences of passengers. It is also supported by Process Improvement Theory that explains how the principles of continuous improvement and operational efficiency can improve process performance and passenger outcomes. Therefore, efficient baggage delivery, accurate information, and effective service recovery are likely to enhance passenger satisfaction. Understanding that airport baggage operations are prone to delays, congestion, and other disruptions, the framework incorporates risk assessment as a moderator affecting the relationship between the service-quality dimensions and passenger satisfaction. The article argues that Responsiveness and Reliability alone are inadequate unless translated into efficient operational processes supported by risk assessment capabilities. The framework provides theoretical and practical insights for improving airport baggage operations and identifies opportunities for future empirical testing across diverse contexts.

**Keywords:** airport baggage operations, baggage reclaim process efficiency, passenger satisfaction, reliability, responsiveness, risk assessment

### **Introduction**

The quality of an air travel is not determined solely by flight safety, punctuality, or the quality of the aircraft. For passengers, the experience continues until they have collected their baggage and exited the airport. Baggage reclaim therefore represents an important component of the airport service experience. When baggage arrives promptly and accurately, the process may attract little attention. When it is delayed, damaged, misdirected, or accompanied by inadequate information, however, the final stage of the journey can become a major source of dissatisfaction.

The importance of baggage operations has become more pronounced as global passenger volumes have recovered and surpassed pre-pandemic levels. Société Internationale de Télécommunications Aéronautiques (SITA, 2024) reported that 5.2 billion passengers travelled in 2023, while the global rate of mishandled baggage declined from 7.6 to 6.9 bags per 1,000 passengers. Despite this improvement, baggage mishandling remains a substantial operational and financial problem. The 2025 SITA Baggage IT Insights report recorded a further decline to 6.3 mishandled bags per 1,000 passengers in 2024, but approximately 33.4 million bags were still mishandled worldwide, with delays accounting for 74% of cases (SITA, 2025). These figures illustrate that technological and operational improvements are producing better aggregate performance, yet passengers continue to encounter baggage problems that can affect their perceptions of the airport and airline.

Baggage reclaim is also becoming increasingly information-intensive. The International Air Transport Association (IATA, 2024) has promoted baggage tracking at acceptance, loading, transfer, and delivery under Resolution 753, recognising that greater visibility can reduce mishandling and accelerate the recovery of delayed baggage. By 2024, SITA reported that 42% of passengers had access to real-time baggage updates, while almost half indicated that mobile baggage tracking would increase their confidence in checking a bag (SITA, 2025). The implication is significant. Passengers increasingly evaluate baggage operations not only according to whether their bags arrive, but also according to whether the process is predictable, transparent, and responsive when something goes wrong.

This creates a need to examine baggage operations from both an operational and customer perspective. Traditional measures such as mishandling rates, baggage delivery times, system availability, and the number of delayed bags remain important, but they do not fully explain passenger

satisfaction. A technically efficient baggage system may still generate dissatisfaction when passengers receive inadequate information or cannot obtain assistance. Conversely, a disruption does not necessarily result in severe dissatisfaction when staff respond promptly, information is available, and recovery procedures are effective. Customer evaluations therefore emerge from the interaction between operational performance and the quality of the service response.

The present article addresses this issue by developing a conceptual framework of passenger satisfaction in airport baggage operations, thereby responding to an important gap in the literature. There is comparatively less conceptual integration between the service-quality characteristics passengers experience, the efficiency of the baggage reclaim process through which those characteristics are delivered, and the risk conditions under which the process operates. The proposed model addresses this gap by bringing these dimensions together.

The study therefore views baggage reclaim not simply as the final logistical stage of air travel, but as a service process in which reliability, responsiveness, operational efficiency, risk management, and passenger expectations interact. This perspective provides a stronger basis for understanding why improvements in baggage technology or process speed alone may not guarantee passenger satisfaction.

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## Literature review

### 1.1. Responsiveness and passenger satisfaction

Responsiveness refers to the willingness and ability of service providers to assist customers promptly, provide timely information and respond effectively when service problems arise (Parasuraman et al., 1988). In airport environments, responsiveness is particularly important because passengers experience services as a sequence of time-sensitive interactions in which delays, uncertainty and inadequate communication can quickly affect their overall evaluation of the journey. Recent reviews of airport and air-transport service quality continue to identify responsiveness as an important dimension of service evaluation, although its relative importance can vary according to the service context and passenger expectations (Usman et al., 2022; Zhang et al., 2023). Usman et al. (2022), for example, show that airport service-quality research has increasingly focused on passenger satisfaction and that service dimensions are closely connected to the processes through which passengers experience airport services. Similarly, Zhang et al. (2023) demonstrate that SERVQUAL and its adaptations remain prominent in air-transport service-quality research, reinforcing the relevance of responsiveness as a passenger-evaluated service attribute.

The relationship between responsiveness and passenger satisfaction becomes particularly visible when passengers encounter delays, disruptions or service uncertainty. Responsiveness encompasses more than simply providing assistance; it also involves the speed with which service providers acknowledge problems, communicate relevant information and take corrective action. This is especially relevant to baggage operations, where passengers may have limited visibility of what is happening to their luggage after aircraft arrival. Evidence from air-transport research indicates that responsiveness can influence passenger evaluations of service quality, although the strength of the relationship is not necessarily uniform across contexts. For example, research examining airline service perceptions during the COVID-19 period found that the responsiveness dimension, including reaction time and service responses to changes, became especially salient during periods of disruption (Zhang et al., 2024). In the Malaysian airline context, Yasim and Zaini (2022) also examined responsiveness alongside reliability and the other SERVQUAL dimensions in relation to customer satisfaction, although their results demonstrate that the individual dimensions do not always produce statistically significant effects when examined simultaneously. This finding is important because it suggests that responsiveness should not be assumed to operate identically across every aviation setting.

Airport-specific evidence nevertheless provides a basis for expecting a positive association between responsiveness and passenger satisfaction. Sorso and Tandog (2024), for instance, examined staff responsiveness and communication in relation to passenger service satisfaction and emphasised the importance of timely interaction between airport personnel and passengers. More broadly, systematic reviews indicate that airport service quality is consistently investigated as an antecedent of passenger satisfaction, while the relative contribution of individual service attributes depends on the operational context (Usman et al., 2022; Rocha et al., 2022). Responsiveness is therefore conceptually relevant to passenger satisfaction because passengers are likely to evaluate an airport more favourably when assistance, information and problem resolution are delivered promptly. In baggage reclaim, this relationship may be particularly pronounced because passengers are waiting for a tangible service outcome—the safe and timely return of their luggage.

Accordingly, the present study does not treat responsiveness merely as an abstract SERVQUAL attribute. Instead, it considers responsiveness as a passenger-perceived service characteristic that can affect satisfaction directly while also influencing the efficiency with which baggage reclaim activities are performed. This distinction is important for the proposed mediation model because responsiveness may contribute to satisfaction through both the immediate service experience and the efficiency of the underlying baggage reclaim process.

### 1.2. Reliability and passenger satisfaction

Reliability refers to the ability of a service provider to perform the promised service dependably and accurately (Parasuraman et al., 1988). In baggage operations, reliability has a particularly concrete meaning. Passengers expect their baggage to arrive at the correct destination, within the expected time, without loss or damage and in accordance with the information provided by the airline or airport. Thus, reliability is closely associated with consistency, accuracy and dependability throughout the baggage-handling process. Airport service-quality research identifies reliability as a recurring dimension of passenger evaluation, while systematic reviews indicate that service-quality measurement in airports is increasingly concerned with operational processes and passenger satisfaction (Usman et al., 2022; Rocha et al., 2022).

The importance of reliability is particularly evident in baggage handling because a failure in one stage of the process can affect several subsequent stages. Baggage must be correctly identified, sorted, transferred, unloaded and delivered to the appropriate reclaim carousel. Behdioğlu et al. (2019), using SERVQUAL and the Best-Worst Method to assess airline baggage-handling systems, found reliability to be the most important service-quality dimension, followed by responsiveness. This baggage-specific evidence is especially relevant to the present study because it indicates that passengers may judge baggage operations not simply according to how quickly employees respond, but also according to whether the baggage service consistently delivers the expected outcome. More recent airport service-quality literature similarly emphasises the importance of reliable operational processes in shaping passenger evaluations (Usman et al., 2022; Zhang et al., 2023).

Reliability is therefore expected to have a positive relationship with passenger satisfaction. When baggage is delivered correctly, safely and within a reasonable timeframe, passengers receive confirmation that the service has performed as expected. Conversely, missing, damaged, misrouted or substantially delayed baggage represents a direct failure of the service promise and is likely to generate dissatisfaction. The relationship is also supported by baggage-handling research showing that passengers identify fast and reliable baggage delivery as important quality requirements. Al-Qatawneh et al. (2025), for example, found that passengers identified fast delivery and reliable baggage services among the critical-to-quality requirements of baggage handling. Their study further demonstrated that delays in baggage handling can adversely affect passenger satisfaction and airport operational performance.

The relationship between reliability and satisfaction should, however, be understood within the wider airport service experience. Airport service-quality research shows that passenger satisfaction is multidimensional and may be influenced by several simultaneous service attributes rather than by a single dimension in isolation (Usman et al., 2022; Zhang et al., 2023). This explains why some studies have found significant effects for particular SERVQUAL dimensions but weaker or nonsignificant effects for reliability when all dimensions are entered simultaneously. For example, Yasim and Zaini (2022) found that reliability and responsiveness were not individually significant predictors of customer satisfaction among their Malaysian low-cost airline sample, despite being theoretically relevant service-quality dimensions. This does not invalidate their conceptual importance; rather, it indicates that the strength of individual dimensions may depend on the service setting, passenger expectations and interaction with other dimensions.

For the present study, reliability is consequently conceptualised as a service attribute that is directly relevant to passenger satisfaction and, at the same time, potentially contributes to the efficiency of baggage reclaim operations. A reliable baggage process reduces rework, exception handling, passenger enquiries and corrective interventions, thereby creating conditions under which baggage can be reclaimed more efficiently. This provides the basis for examining baggage reclaim process efficiency as a mediating mechanism rather than assuming that reliability operates only through a direct service-quality pathway.

### 1.3. Baggage reclaim process efficiency

Baggage-reclaim process efficiency refers to the ability of airport baggage operations to move, process and deliver arriving passenger baggage accurately and within an appropriate timeframe while minimising unnecessary delays, errors, rework and resource consumption. The concept is therefore broader than the simple speed of baggage delivery. It incorporates the coordination of people, equipment, information, baggage flows and operational procedures from aircraft arrival through unloading, sorting, transportation and placement on the reclaim carousel. Contemporary baggage-handling research describes the baggage handling system as a complex operational system involving multiple agents and interconnected activities, making process coordination essential to both operational performance and passenger experience (Al-Qatawneh et al., 2025).

The importance of process efficiency is reinforced by research examining technological and operational improvements in baggage-handling systems. Yang et al. (2023), for example, developed an Internet-of-Things-enabled dynamic routing approach that incorporated real-time baggage and equipment information into baggage transmission decisions. Their airport case demonstrated approximately a 10% improvement in routing efficiency and a reduction in average baggage throughput time of about 5%, illustrating how real-time information can improve the operational performance of baggage systems. This is important as baggage efficiency is positioned as an operational process outcome rather than merely a perception of service quality.

Process improvement principles provide a further basis for conceptualising baggage reclaim efficiency as an intermediate mechanism. Process improvement approaches emphasise the systematic identification of process deficiencies, measurement of performance, analysis of root causes, implementation of corrective improvements and control of improved processes. This logic is particularly compatible with baggage operations because baggage movement involves multiple sequential and interdependent activities. Al-Qatawneh et al. (2025) provide especially strong empirical support for this perspective. Applying the Six Sigma Define-Measure-Analyse-Improve-Control (DMAIC) methodology to an international airport, they found reductions of 10.5% and 19% in average baggage-handling time for two aircraft categories. The study also linked shorter baggage-handling times with improved passenger satisfaction and airport operating performance.

The same study demonstrates why efficiency can be considered a mechanism connecting service attributes with passenger outcomes. Passengers identified speed, reliable service, correct delivery and the absence of baggage loss or damage as critical quality requirements. Thus, responsiveness and reliability are not operationally detached from efficiency. Prompt responses can facilitate faster problem resolution and information flow, while reliable processes reduce errors, misrouting and repeated handling. In turn, these improvements can shorten waiting times and reduce uncertainty at the reclaim area. The National Academies of Sciences, Engineering, and Medicine (2023) similarly emphasises that baggage-handling systems are important to

airport operations and customer satisfaction and argues that decisions concerning baggage systems should consider operational performance, maintenance, efficiency and long-term system consequences rather than initial investment alone.

The proposed conceptualisation therefore treats baggage reclaim process efficiency as a mediator. Responsiveness and reliability represent passenger-perceived service characteristics, whereas process efficiency represents the operational mechanism through which these characteristics can become observable outcomes at baggage reclaim. This distinction prevents conceptual overlap between service quality and operational performance. It also provides a more coherent explanation of why responsiveness and reliability may influence satisfaction: their value is not limited to interpersonal service encounters but may extend to the effectiveness, consistency and speed of the underlying baggage process.

#### ***1.4. Baggage reclaim process efficiency and passenger satisfaction***

The relationship between baggage reclaim process efficiency and passenger satisfaction follows from the direct nature of the baggage-reclaim experience. Unlike several airport services that passengers may encounter only briefly, baggage reclaim is associated with a clearly observable service outcome: passengers expect their baggage to be available, identifiable and retrievable within a reasonable period after arrival. Consequently, waiting time, baggage availability, delivery accuracy and the occurrence of baggage problems can become salient determinants of passengers' overall evaluation of the airport experience. Recent airport service-quality research consistently identifies operational performance and service attributes as important elements of passenger satisfaction (Usman et al., 2022; Zhang et al., 2023). Research using online airport reviews likewise demonstrates that operational service attributes are associated with passenger satisfaction, confirming that passengers evaluate airports partly through the performance of specific service processes (Zhang et al., 2022).

Baggage-handling studies provide more direct evidence for this relationship. Al-Qatawneh et al. (2025) found that delayed baggage handling adversely affects passenger satisfaction and demonstrated that reducing baggage-handling time through Six Sigma process improvement can improve operational performance and customer satisfaction. The finding is consistent with the broader airport service-quality literature, which suggests that passengers form satisfaction judgements from the cumulative performance of airport processes rather than from isolated interpersonal encounters (Rocha et al., 2022; Usman et al., 2022). In this sense, efficient baggage reclaim reduces one of the most visible sources of post-flight waiting and uncertainty.

Expectation–Confirmation Theory (ECT) provides a useful explanation for why process efficiency should affect satisfaction. According to Oliver (1980), satisfaction results from a comparison between prior expectations and perceived performance. In the baggage-reclaim context, passengers generally arrive with an implicit expectation that their baggage will be delivered within a reasonable period and without major complications. When baggage is available promptly and the reclaim process functions smoothly, perceived performance is likely to confirm or exceed expectations. When baggage delivery is delayed, inconsistent or disrupted, negative disconfirmation may occur, reducing satisfaction. The relationship is therefore not simply about reducing minutes of waiting; it concerns whether the actual baggage-reclaim experience confirms what passengers reasonably expected from the service.

Baggage-reclaim process efficiency can consequently be understood as a critical operational pathway through which passenger expectations are converted into satisfaction judgements. An efficient process provides timely and predictable service, reduces unnecessary waiting and limits the uncertainty associated with baggage delivery. The proposed mediation relationship is therefore theoretically consistent with both process-improvement logic and ECT as service-quality attributes can improve the underlying process, while the resulting process performance influences whether passengers perceive their baggage-reclaim experience as meeting or exceeding expectations.

#### ***1.5. Risk assessment as a moderating variable***

Risk assessment refers to the systematic identification, analysis and evaluation of risks in order to determine their likelihood, consequences and relative priority. It should be distinguished from risk management. Risk assessment establishes an understanding of potential threats and their significance, whereas risk management encompasses the broader process of selecting and implementing responses to those risks. This distinction is important for the present framework because risk assessment is proposed as a moderator, not as a direct predictor of passenger satisfaction or as a mediator between service quality and satisfaction.

Airport operations are exposed to multiple sources of uncertainty, including equipment failures, human error, operational disruptions, weather conditions, infrastructure constraints, information-system failures and abnormal passenger or baggage flows. Contemporary airport research increasingly treats these conditions as interconnected rather than isolated risks. For example, Gkiotsalitis and Cats (2024) argue that airport terminal resilience requires systematic assessment of operational performance under disruptive conditions and demonstrate the importance of considering individual passenger delays when evaluating terminal resilience. This supports the view that the operating environment in which baggage processes occur can alter the consequences of otherwise efficient or inefficient operations.

Risk assessment is particularly relevant to baggage operations because process efficiency does not necessarily produce the same passenger outcome under all operating conditions. During normal operations, an efficient reclaim process may translate relatively directly into passenger satisfaction. Under heightened-risk conditions, however, the same process may encounter disruptions that increase waiting time, create baggage-flow bottlenecks or require additional screening and handling. The importance of identifying and evaluating operational risks before they disrupt airport activities is also recognised in airport resilience planning. The National Academies of Sciences, Engineering, and Medicine (2024), for example, describes risk assessment as a foundation for mitigation planning because airport personnel must identify potential shocks and understand their likelihood and operational consequences before appropriate mitigation strategies can be developed.

Recent research further demonstrates the increasingly analytical nature of airport risk assessment. Marzec and Fellner (2023) reviewed risk-assessment tools and techniques applicable to aerodrome operations and highlighted their role within airport safety-management systems. These developments are relevant to baggage operations because risk assessment can help identify conditions under which normal process-performance

assumptions may no longer hold. Therefore, risk assessment is conceptualised as a boundary condition rather than another operational input. High-quality risk assessment may allow airports to identify vulnerabilities, anticipate disruptions and prioritise controls before process failures become visible to passengers. Conversely, weak or incomplete risk assessment may leave the baggage-reclaim process more exposed to disruptions that reduce the passenger benefits normally associated with efficient operations. Thus, risk assessment is expected to influence the strength of the relationship between baggage reclaim process efficiency and passenger satisfaction.

This moderating argument also provides a clearer theoretical distinction between process improvement and risk assessment. Process improvement focuses on making the baggage-reclaim process more efficient, consistent and capable, whereas risk assessment focuses on understanding the conditions that may threaten that performance. The two concepts are therefore complementary rather than interchangeable. The proposed model consequently positions risk assessment as the contextual condition that determines how strongly baggage reclaim process efficiency is reflected in passenger satisfaction.

### 1.6. Synthesis and research Gap

This article suggests that responsiveness and reliability should be understood as important service-quality dimensions associated with passenger satisfaction. Responsiveness concerns the timeliness of assistance, information and problem resolution, while reliability concerns the consistency and accuracy with which the promised baggage service is delivered. Both can influence not only passenger evaluations directly but also the functioning of the underlying baggage-reclaim process.

Baggage-reclaim process efficiency therefore provides the proposed mediating mechanism. It captures how service attributes become operationally meaningful through shorter processing and waiting times, fewer errors, better coordination and more predictable baggage delivery. Risk assessment represents the extent to which potential operational risks are identified, evaluated and prioritised in an environment characterised by uncertainty and disruption. Its proposed moderating role recognises that even a well-designed and efficient baggage process may produce different passenger outcomes depending on the risks surrounding its operation.

The literature provides substantial support for examining airport baggage operation, service quality, passenger satisfaction, but these streams of research have generally developed somewhat separately. SERVQUAL provides an established basis for examining responsiveness and reliability, and baggage-specific evidence confirms the importance of these dimensions (Rezaei et al., 2018). Airport service-quality reviews demonstrate the importance of process-oriented assessment and passenger satisfaction (Usman et al., 2022; da Rocha et al., 2022). Meanwhile, baggage-management research demonstrates that process-improvement approaches can reduce delays and improve operational performance (Alsayouf et al., 2018; Al-Qatawneh et al., 2025).

However, these strands have not been sufficiently integrated into a single explanatory model centred specifically on baggage reclaim. In particular, less attention has been given to the possibility that responsiveness and reliability influence passenger satisfaction through baggage reclaim process efficiency, while the strength of the efficiency–satisfaction relationship varies according to risk assessment.

The proposed framework addresses this gap by integrating three complementary theoretical perspectives with SERVQUAL explaining responsiveness and reliability; Process Improvement Theory explaining baggage reclaim process efficiency through continuous process analysis and improvement; and Expectation-Confirmation Theory explaining the formation of passenger satisfaction from experienced service performance. Risk assessment is then introduced as a contextual moderator.

## Conceptual framework

This article introduces an integrated framework that is intended to explore the interaction among Responsiveness, Reliability, Baggage Reclaim Process Efficiency (BRPE), Risk Assessment, and Passenger Satisfaction. In the proposed framework, Responsiveness and Reliability are independent variables, BRPE is a mediating variable, Risk Assessment is a moderating variables and Passenger Satisfaction serves as the dependent variable as shown in Figure 1 below.

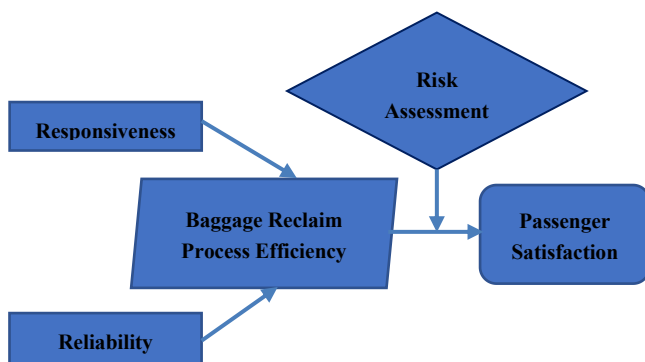


**Fig. 1 – A conceptual framework of passenger satisfaction in airport baggage operations.**

In line with the proposed framework, responsiveness and reliability are posited to enhance the efficiency of the baggage reclaim process, which then influences passenger satisfaction. The framework is complemented through SERVQUAL, Expectation-Confirmation Theory, and Process Improvement Theory. SERVQUAL establishes the relevance of responsiveness and reliability as service-quality dimensions (Parasuraman et al., 1988; Zeithaml et al.,

1996). Empirical work on airline baggage handling systems shows that these dimensions are particularly salient when passengers evaluate baggage-related performance (Rezaei et al., 2018). Expectation Confirmation Theory explains why improved operational performance should enhance passenger satisfaction when actual performance meets or exceeds prior expectations (Oliver, 1980). Process Improvement Theory supports the logic for treating baggage reclaim efficiency as the mechanism through which service attributes are converted into measurable outcomes. This aligns with continuous-improvement approaches to reduce delays, improve on-time performance, and enhance operational reliability (Deming, 1986; Van Goethem et al., 2016).

Consequently, the framework specifies responsiveness and reliability as antecedents of baggage-reclaim process efficiency, with the efficiency transmitting effects to passenger satisfaction. Writing on *Customer Satisfaction in Airport Baggage Reclaim: Conceptualising a Moderated-Mediated Model of Service Quality and Risk Management*, Faizal (2025) points out that a reliable and automated baggage handling system directly improves customer satisfaction by ensuring luggage is delivered quickly, accurately, and efficiently. In the proposed framework, risk assessment does not replace this mechanism; rather, it is expected to condition the final stage of the process. When risk assessment is stronger, the positive effect of an efficient baggage reclaim process on passenger satisfaction is strengthened, because efficient performance is accompanied by perceptions of control, dependability, and operational assurance. This moderated relationship is consistent with contingency perspectives on service quality and risk management, which recognise that the effectiveness of operational processes depends on contextual factors such as uncertainty, and control systems (Silvestro, 2001). In statistical terms, the two predictors can be examined through the same mediation structure, with risk assessment moderating the relationship between the mediator and the dependent variable. The framework therefore provides a basis for testing both the indirect effects of responsiveness and reliability and whether those indirect effects vary according to the level of risk assessment.

The contribution of the framework lies in the division of explanatory roles among the three theories rather than treating them as competing explanations. SERVQUAL answers the question of what service characteristics matter by focusing on responsiveness and reliability. Process Improvement Theory answers how those service characteristics can be translated into operational performance, represented by baggage reclaim process efficiency. Expectation-Confirmation Theory explains why improved operational performance should result in passenger satisfaction, because passengers compare experienced performance with their expectations.

Risk assessment provides the contextual element. It recognises that passengers do not evaluate baggage operations solely according to speed and reliability; their evaluation can also be shaped by perceptions of whether the process is adequately controlled against operational risks. The resulting framework is therefore more focused than a general airport service-quality model. It specifically explains how responsiveness and reliability influence passenger satisfaction through the efficiency of baggage reclaim, while risk assessment conditions the strength of the efficiency–satisfaction relationship.

#### 4. Discussion and Implications

The proposed framework positions passenger satisfaction in airport baggage operations as the outcome of both service quality and process performance. This is consistent with the SERVQUAL perspective, which identifies responsiveness and reliability as important dimensions through which customers evaluate service quality (Parasuraman et al., 1988). In the baggage context, these dimensions are particularly relevant because passengers expect their baggage to be delivered accurately, consistently, and within a reasonable period. Evidence from baggage-specific research supports this emphasis, with reliability and responsiveness identified as particularly important dimensions in evaluating airline baggage handling systems (Rezaei et al., 2018).

The framework further proposes that these service attributes operate through baggage reclaim process efficiency. This reflects the process-improvement perspective that customer outcomes are influenced by the effectiveness of the underlying processes through which services are delivered. Airport baggage research demonstrates that systematic process improvement can reduce delays, variation, and operational inefficiencies. Alsyouf et al. (2018) showed how Lean Six Sigma could improve baggage flow, while Al-Qatawneh et al. (2025) demonstrated measurable reductions in baggage handling time through DMAIC-based improvement. Ruf et al. (2022) similarly demonstrated the value of data-driven resource reallocation for improving baggage-handling operations.

The proposed relationship between process efficiency and passenger satisfaction is consistent with Expectation-Confirmation Theory. Passengers approach baggage reclaim with expectations regarding waiting time, accuracy, and the availability of their baggage. Satisfaction is therefore likely to increase when actual performance confirms or exceeds these expectations (Oliver, 1980). The importance of service performance to passenger satisfaction is also supported by broader airport service-quality research (Eboli et al., 2022; Usman et al., 2022).

The inclusion of risk assessment adds an important contextual dimension. Efficient processes do not operate in isolation from operational uncertainty. Baggage systems remain exposed to equipment failures, information errors, congestion, misrouting, security concerns, and other disruptions. Consequently, the proposed moderating relationship suggests that the contribution of process efficiency to passenger satisfaction may depend on the extent to which operational risks are systematically assessed and controlled. This represents an important opportunity for future research rather than a relationship that should be assumed to have already been established.

Overall, the framework extends existing airport service-quality research by shifting attention from satisfaction as a direct consequence of perceived service quality towards the process through which service quality is delivered. This provides a more operational explanation of passenger satisfaction and is particularly appropriate for baggage reclaim, where service performance is closely tied to the efficiency and reliability of interconnected processes.

The study offers three main theoretical implications. First, it extends the application of SERVQUAL by focusing specifically on responsiveness and reliability within the baggage reclaim context rather than treating airport service quality as a broad, undifferentiated construct (Parasuraman et al., 1988; Rezaei et al., 2018). Second, it applies a process-improvement perspective to explain why service-quality attributes may translate into passenger outcomes through operational efficiency. This is supported by evidence that Lean Six Sigma and data-driven process interventions can improve baggage flow and handling performance (Alsyouf et al., 2018; Ruf et al., 2022; Al-Qatawneh et al., 2025). Third, Expectation-Confirmation Theory

provides the satisfaction mechanism by explaining how actual baggage performance is evaluated against passenger expectations (Oliver, 1980). The framework therefore connects service perception, operational process performance, and satisfaction within a single explanatory model. Its principal theoretical contribution is not the individual constructs but their integration in the specific setting of airport baggage reclaim.

For airport and airline managers, the framework suggests that improving passenger satisfaction requires more than increasing the speed of baggage delivery. Attention should also be given to the reliability and responsiveness of the processes supporting baggage reclaim. Operational improvements should therefore target bottlenecks, unnecessary process variation, equipment and information failures, and coordination problems across baggage-handling activities (Alsyouf et al., 2018; Al-Qatawneh et al., 2025).

Managers should also incorporate risk assessment into routine baggage-process improvement. Identifying potential failures before they affect passengers can help protect the gains achieved through process improvement. This is particularly important because a process that is efficient under normal conditions may perform poorly when exposed to operational disruptions. Risk assessment should consequently complement, rather than replace, process-efficiency initiatives.

Finally, passenger satisfaction should be evaluated alongside operational indicators. Measures such as baggage delivery time, mishandled baggage, process reliability, responsiveness to irregularities, and passenger perceptions can provide a more complete assessment of baggage performance. This broader approach is consistent with the growing emphasis on process-based airport service-quality measurement (Usman et al., 2022).

The proposed framework provides a basis for empirical testing of the direct, mediating, and moderating relationships specified in the model. Future studies can examine whether responsiveness and reliability significantly improve baggage reclaim process efficiency, whether efficiency mediates their effects on passenger satisfaction, and whether risk assessment changes the strength of the efficiency–satisfaction relationship. Longitudinal and multi-airport studies would be particularly useful for determining whether the relationships remain stable across different operational environments.

## Conclusion

Passenger satisfaction in airport baggage operations is shaped not simply by whether baggage is eventually delivered, but by how promptly, consistently, and efficiently the reclaim process is experienced. The literature reviewed indicates that responsiveness and reliability remain important dimensions of service quality, while the efficiency of baggage handling provides a more operational explanation of how these service experiences are translated into passenger perceptions. Evidence from baggage-handling studies further suggests that improvements in processing time, workflow, and operational consistency can generate meaningful service benefits (Al-Qatawneh et al., 2025).

At the same time, baggage operations are exposed to operational disruptions and uncertainties that can affect service outcomes. Consequently, effective risk assessment is important for maintaining process performance when normal operating conditions are disrupted. This highlights the need to view passenger satisfaction as the outcome of interconnected service and operational processes rather than as a consequence of service quality alone.

Overall, the literature supports a more integrated understanding of airport baggage operations in which responsiveness, reliability, process efficiency, and risk conditions jointly shape the passenger experience. The proposed framework therefore provides a basis for future empirical research examining these relationships and offers airport operators a more process-oriented perspective for improving baggage reclaim performance and passenger satisfaction.

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