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Service Responsiveness, Employee Competence, and Technology Use: Effects on Business Actor Satisfaction via Service Quality

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ABSTRACT

Purpose: This study analyzes the influence of service responsiveness, employee competence, and use of technology on business actor satisfaction through service quality at the Investment and One-Stop Integrated Service Office (DPMPTSP) of Karimun Regency.
Methodology: A quantitative survey was administered to 162 business actors selected from a population of 1,732 licensing service users through the Slovin formula, with data collected via Google Forms and analyzed using Partial Least Squares Structural Equation Modeling.
Results: Service responsiveness had a positive but non-significant effect on service quality (11.9%) and a negative, non-significant effect on satisfaction (9.8%). Employee competence and technology use had positive and significant effects on service quality (58.5% and 26.5%) and satisfaction (34.2% and 18.3%). Service quality significantly affected satisfaction (55.3%) and mediated the effects of competence (32.4%) and technology (14.7%), while its mediation of responsiveness remained non-significant (6.6%).
Conclusions: Employee competence and technology use, rather than responsiveness alone, are the principal drivers of service quality and satisfaction, and service quality functions as a genuine mediator linking these capabilities to satisfaction outcomes.
Limitations: The study is confined to a single regency licensing office and relies on self-reported survey data, which may limit generalizability to other regions or service sectors.
Contributions: This study provides empirical evidence that service quality mediates organizational capabilities and business actor satisfaction in Indonesian one-stop licensing services.

Keywords: *Business Actor Satisfaction, Employee Competence, Service Quality, Service Responsiveness, Use Of Technology*

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1. Introduction

Regional governments, acting as both service providers and service regulators, hold broad authority to meet the diverse needs of the community, and their principal task is to deliver services that satisfy the demands of citizens and business actors alike. Government apparatus and institutions are therefore required to continuously strengthen their capacity so that they can provide the best possible service. In many service sectors, however, public service delivery still falls short of community expectations, a shortfall that becomes visible through complaints channeled via mass media and social networks and that gradually erodes public trust in government institutions (Alkraiji, 2021).

Rising public expectations regarding the quality of government services reflect a broader shift in the relationship between government, citizens, and business actors. Service quality is shaped by several interrelated factors, including staff responsiveness, willingness to meet the demands of business actors, the ability to resolve problems quickly and accurately, and ease of access to services. Citizens today do not merely ask whether a service was delivered, but scrutinize the quality of that service, placing pressure on government institutions to move toward good and clean governance supported by responsive, competent, and technologically capable personnel (Al-Nidawi, Al-Wassiti, Maan, & Othman, 2018).

The overall portrait of public service quality in Indonesia is still generally inconsistent with community and business expectations. Complaints commonly concern convoluted and lengthy service processes, unclear requirements, unfriendly service staff, uncertain processing times, and substandard service facilities. As digital literacy among the public has grown, aspirations and criticisms are now voiced through diverse channels, including social media platforms and short message service complaint systems, placing continuous pressure on government agencies to demonstrate measurable service improvement (Mensah, 2020).

Business actor satisfaction is widely regarded as the ultimate goal and the key performance indicator of public service delivery agencies. Service providers must therefore understand precisely what business actors need, and must in turn assess whether the quality of service delivered meets or falls short of those needs. High service quality strengthens the relationship between government agencies and business actors, builds trust in public service institutions, and provides a foundation for sustained investment and economic activity within the region (Khan, Lima, & Mahmud, 2021).

Law Number 25 of 2009 concerning Public Services establishes service standards as benchmarks used to guide service implementation and as a basis for evaluating the quality of services delivered to the community. These standards implicitly assume that government agencies possess the responsiveness, competence, and technological capacity needed to consistently meet or exceed the expectations embedded in the standard, an assumption that does not always hold in practice, particularly within regency-level licensing offices operating under considerable administrative and resource constraints (Sabani, 2021).

Strategic planning within a public service agency typically begins with the articulation of a vision, understood as a statement describing the desired future condition the organization intends to achieve. A clearly articulated vision provides direction for subsequent policy and operational choices, including decisions about how responsiveness, staff competence, and technology adoption should be prioritized within the agency's service improvement agenda (Turner, Prasojo, & Sumarwono, 2022).

The vision of the Karimun Regency Investment and One-Stop Integrated Services Office (*Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu*/DPMPTSP) is fully aligned with the broader vision of the Regency Government while remaining specific to its mandate of facilitating investment and business licensing. Achieving this vision requires the agency to continuously strengthen the responsiveness of its service delivery, the competence of its personnel, and its use of digital licensing technology, since these three capabilities jointly determine whether business actors

experience the agency's services as efficient, transparent, and trustworthy (Boselie, Van Harten, & Veld, 2021).

One method commonly used to evaluate public service performance is the Community Satisfaction Survey (SKM), through which an agency can systematically monitor how service recipients perceive the quality of services received and identify specific areas requiring improvement. For DPMPTSP Karimun Regency, the SKM functions as an important diagnostic tool for understanding whether ongoing efforts to strengthen responsiveness, competence, and technology use are translating into improved perceptions of service quality among business actors (Alkraiji, 2021).

The implementation of the Community Satisfaction Survey refers to the Regulation of the Minister of State Apparatus Empowerment and Bureaucratic Reform Number 14 of 2017 concerning General Guidelines for Compiling the Community Satisfaction Survey for Public Service Providers, which specifies the dimensions along which community and business actor perceptions should be measured, including responsiveness, competence of service personnel, and the adequacy of supporting facilities and systems (Mensah, 2020).

Community satisfaction scores can also serve as a broader indicator of the success or failure of an agency's service delivery strategy over time, providing a longitudinal reference point against which subsequent improvement initiatives, including investments in staff training and licensing technology, can be evaluated.

Figure 1. Community satisfaction index value of DPMPTSP Karimun Regency

Figure 1 shows that the Community Satisfaction Index value of the Karimun Regency Investment and One-Stop Integrated Service Office did not reach its desired target, a gap that motivates the present investigation into the influence of service responsiveness, employee competence, and use of technology on business actor satisfaction through service quality at this agency.

Although prior studies have separately examined service responsiveness, employee competence, technology adoption, and service quality in various public and private service settings, comparatively few have integrated these four constructs into a single structural model that simultaneously tests their direct effects on business actor satisfaction and their indirect effects mediated by service quality within an Indonesian one-stop investment and licensing office. The novelty of this study lies in applying a comprehensive Partial Least Squares Structural Equation Model to disentangle which of these three antecedents, responsiveness, competence, or technology, exerts the strongest direct and mediated influence on business actor satisfaction at DPMPTSP Karimun Regency, a regency-level licensing institution that has received limited empirical attention relative to national or provincial agencies. Building on this rationale, the purpose of this study is to analyze the influence of service responsiveness, employee competence, and use of technology on business actor satisfaction, both directly and through service quality as a mediating variable, at the Karimun Regency Investment and One-Stop Integrated Service Office, with a view toward providing empirically grounded recommendations for strengthening licensing service delivery.

2. Literature Review and Hypotheses Development

2.1 Business Satisfaction

Customer satisfaction, derived from the Latin word satis meaning enough and facere meaning to do or make, refers broadly to an effort to fulfil or adequately meet a need (Alkraiji, 2021). In the context of public licensing services, business actor satisfaction reflects the extent to which the experience of interacting with a government agency matches or exceeds the expectations business actors bring to that interaction.

Customer satisfaction is an evaluation of the performance of a product or service relative to the expectations held by the person receiving it, and in public-sector contexts this evaluation is shaped jointly by the perceived responsiveness of staff, their technical and interpersonal competence, and the technological convenience of the service channel through which the interaction occurs (Khan, Lima, & Mahmud, 2021).

2.2 Service Responsiveness

Service responsiveness theory is a concept in service management literature that emphasizes the importance of promptly and effectively meeting service recipients' needs and expectations. In government settings, responsiveness captures the extent to which an agency demonstrates alignment between the aspirations of the community and the policies and service programs it delivers, a dimension considered central to establishing the perceived quality of public services (Al-Nidawi, Al-Wassiti, Maan, & Othman, 2018).

The responsiveness of government services reflects an institution's ability to demonstrate harmony between the needs and aspirations of the community and the policies and service delivery programs it develops in response. This alignment is particularly important in licensing and investment services, where delays or perceived indifference from service personnel can directly discourage business activity and investment within the region (Mensah, 2020). Service responsiveness is more specifically defined as an organization's ability to respond to customer requests, questions, and complaints in a timely and effective manner, encompassing both the speed of response and the accuracy and relevance of the resolution provided (Sabani, 2021).

2.3 Employee Competencies

Employee competence theory describes the abilities, skills, and underlying characteristics that enable an individual to perform a job effectively, encompassing observable behavioral skills as well as less visible attributes such as motives, traits, and self-concept that jointly determine job performance (Jumady & Lilla, 2021). Competence reflects the characteristics of the knowledge and skills possessed or required by each individual to enable that individual to perform the tasks and responsibilities assigned effectively, efficiently, and to an acceptable professional standard (Boselie, Van Harten, & Veld, 2021).

Experience is an important element in shaping a person's mastery of competence in relation to assigned tasks. Employees who accumulate greater exposure to varied licensing cases and public interactions tend to develop more refined judgment in handling non-routine requests, a capability that formal training alone often struggles to replicate (Bhatti, Soomro, & Shah, 2021). To understand employee competence more precisely, it is useful to distinguish among its constituent dimensions, which are commonly categorized as motives, traits, self-concept, knowledge, and skills, each contributing differently to how an employee approaches and resolves a service-related task (Sina & Sunarsi, 2021).

According to Spencer and Spencer, as cited in later competence literature, competence functions as the underlying characteristic of an individual that is causally related to effective or superior performance in a job, a formulation that continues to underpin most contemporary employee competence assessment frameworks used in public-sector human resource management (Anwar & Abdullah, 2021). This view is reinforced by the understanding that competence functions as a determining factor in whether an individual succeeds in performing a job or navigating a particular situation, since competence-based selection and training practices are more strongly associated with

sustained improvements in service delivery than credential-based approaches alone (Bilderback & Miller, 2023).

Based on these definitions, employee competence can be understood as the ability possessed by an employee, comprising knowledge, skills, and attitude, to perform or complete a given job or task effectively, expressed through observable action. A competent employee is therefore someone who approaches their work with confidence grounded in mastery of relevant knowledge, technical skill, and a professional attitude appropriate to the demands of their role.

2.4 Use of Technology

Technology use theory explains how and why technology is adopted and used by individuals, groups, or organizations, with particular attention to internet-based tools that have experienced extraordinary growth in recent years. Since its introduction, internet-based technology has been widely adopted because it is seen as providing substantial benefits for the smooth functioning of business and administrative processes, including the digital delivery of licensing services (Fernanda & Nav, 2020).

Technology is designed to support human work by enabling practical and effective efficiency. Technology that initially supported the fulfilment of production needs now extends to information technology that helps manage administrative data, a shift with direct implications for the productivity of licensing and investment offices that process large volumes of applications (Deku, Wang, & Preko, 2024).

Alongside the development of the digital-based era, business licensing has undergone considerable transformation through the implementation of electronic licensing systems designed to simplify licensing management. Such systems are expected to make it easier for the business community to manage permits, thereby supporting more effective government oversight of business activity and reducing the negative externalities that unregulated business activity can generate for the community and environment (Sabani, 2021).

2.5 Quality of Service

Service is any act or performance that one party can offer to another that is essentially intangible and does not result in the transfer of ownership of anything (Alkraiji, 2021). Kotler and Keller (2007) further note that such service behavior can occur before, during, and after a transaction, and that a high level of service quality is generally associated with higher satisfaction and more frequent repeat engagement.

Kotler and Keller (2007) identify four characteristics of service, namely intangibility, inseparability, variability, and perishability. Public services are needed daily by the community to support a wide range of needs, and every government activity directed at meeting those needs is expected to generate satisfaction even though the outcome is not bound to a tangible, physical product.

Meanwhile, public service is defined under Indonesian regulation as all activities intended to fulfil the needs of service recipients in accordance with applicable legal provisions. In essence, public service represents the provision of excellent service to the community as a manifestation of the state apparatus's obligation as a public servant, an obligation that takes on particular significance in licensing offices where delays directly affect business actors' capacity to operate legally.

To understand service quality more precisely, it is useful to recognize that quality is a combination of traits and characteristics that determine the extent to which a service can meet customer requirements and needs (Kant & Jaiswal, 2017). Quality can also be understood as a dynamic condition related to products, services, human resources, processes, and environment that meets or exceeds expectations (Goumairi, Aoula, & Souda, 2020).

Several complementary perspectives further enrich this understanding. The product-based approach treats quality as an objective, measurable characteristic of a service; the user-based approach holds that quality depends on the perception of the person evaluating it, such that the service that best satisfies individual preferences is judged the highest quality; and the value-based approach evaluates quality against the trade-off between performance and price, defining quality as the

level of performance that is affordable and commensurate with the price paid (Fuchs & Fangpong, 2021).

Based on these definitions, service quality can be understood as the level of service provided by a public service provider in accordance with predetermined procedures and regulations that meets or exceeds expectations and generates satisfaction for the recipients of that service.

2.6 Research Hypothesis

2.6.1 Service Responsiveness and Business Actor Satisfaction

Service responsiveness has a significant relationship with the satisfaction of business actors. Responsiveness refers to the speed and effectiveness of service providers in responding to requests, questions, and problems faced by business actors. This is supported by previous research by Kasriana, Fatmawati, and Haerana (2020) with the title Responsiveness of Waste Management Services at the Makassar City Parks and Hygiene Service with results showing that in realizing maximum services and in accordance with community expectations related to waste, it is felt that there is a great need for high responsiveness or responsiveness of waste services from the Makassar City Parks and Hygiene Service in carrying out every task, principal and function as an institution that has the highest responsibility to accommodate and facilitate the interests of service to the community.

H_1: There is an influence of service responsiveness on the satisfaction of business actors

2.6.2 Employee Competence and Business Actor Satisfaction

The satisfaction of business actors is a reflection of the quality of licensing services received by business actors. The satisfaction of business actors often refers to the level of competence or competence of service providers. However, under certain conditions, relatively good employee competence may not necessarily be able to satisfy the community. This is related to the lack of community ability in assessing administrative technical competence so that the community has a tendency to assess employee competence from a non-technical side, for example the interpersonal relationship between employees and the community and the comfort obtained during receiving services (Elrehail, Harazneh, Abuhjeeleh, Alzghoul, Alnajdawi, & Ibrahim, 2020).

This is supported by previous research conducted by Dewi and Muhsin (2019) with the title The Influence of Competence, Work Commitment, and Service Quality on Community Satisfaction with results showing a significant positive influence of competence, commitment, performance, and service quality on community satisfaction. The results of the partial test showed that there was a significant positive influence of each variable, namely competence, commitment, and service quality on community satisfaction. As for the performance variables, they have a not significant effect on community satisfaction. The conclusion of this study is that increasing community satisfaction can be achieved by improving competence, commitment, and service quality in Bandar District, Batang Regency.

H_2: There is an influence of employee competence on the satisfaction of business actors

2.6.3 Use of Technology and Business Actor Satisfaction

The use of Technology allows service providers to communicate more effectively and provide more responsive services to business actors. Better service in terms of responsiveness and ease of access to information can increase satisfaction. This is supported by previous research conducted by Gelu, FoEh, and Niha (2022), that service quality has a positive and crucial impact on consumer satisfaction. The use of information technology has a positive and crucial impact on consumer satisfaction. Customer value has a positive and crucial impact on consumer satisfaction.

Service quality has a positive and crucial impact on consumer loyalty. The use of information technology has a positive and crucial impact on consumer loyalty. Customer value has a positive and crucial impact on consumer loyalty. Service quality, the use of information technology, and customer value have a positive and crucial impact on consumer satisfaction simultaneously. Service quality, the use of information technology, and customer value have a positive and crucial impact on consumer loyalty simultaneously.

H_3: There is an influence of the use of technology on the satisfaction of business actors

2.6.4 Service Quality and Business Actor Satisfaction

Quality has a close relationship with customer satisfaction. Quality provides an impetus to customers to forge strong bonds with the agency in the long term, such a bond allows the agency to carefully understand the expectations of customers as well as their needs. Thus, an agency can increase customer satisfaction, when it can issue policies that are in accordance with customer needs. Good or bad service quality can be assessed by how much the service provider is able to meet the expectations and needs of the community. Therefore, the apparatus must always be willing to listen to the complaints of the community so that the community feels well and properly served, and by listening to the complaints and opinions of the community, the apparatus can find out the quality of the services provided so far and will be an input to improve the quality of service.

One of the key determinants of business actor satisfaction is the quality of licensing services. Service quality refers to the extent to which a service meets or exceeds users' expectations. Previous studies have consistently demonstrated that higher service quality leads to greater customer satisfaction. For example, Cronin and Taylor (1992) found that service quality has a significant positive effect on customer satisfaction, while Brady, Robertson, and Cronin (2001) confirmed that improvements in service quality enhance customer satisfaction across service settings.

This is supported by a previous study conducted by Tamara, Mananeke, and Kojo (2018) with the title The Effect of Service Quality on Community Satisfaction in Lower Kawangkoan, West Amurang District, South Minahasa Regency with the results of the study showing simultaneously the influence of reliability, responsiveness, guarantee, empathy and significant direct evidence on the variables of community satisfaction. In the role of the Government in Lower Kawangkoan, it is necessary to look at the quality of service, in the form of reliability, responsiveness, guarantee, empathy and direct evidence which will ultimately affect community satisfaction.

H_4: There is an influence of service quality on the satisfaction of business actors

2.6.5 Service Responsiveness and Service Quality

The relationship between service responsiveness and service quality illustrates how the speed and accuracy with which service personnel address requests directly shapes business actors' perception of overall service quality, since a slow or indifferent response is typically interpreted as a sign of poor institutional quality regardless of the eventual outcome (Sabani, 2021).

This can be seen from the results of interviews with the community which stated that the speed of service from firefighters is still not good because firefighters are not confident in carrying out their duties and cannot be sure how long it takes to handle fire disasters, but officers try to communicate well with victims through empathy in the form of providing assistance to victims of fire disasters.

H_5: There is an influence of service responsiveness on service quality

2.6.6 Employee Competence and Service Quality

The competence of employees in providing services will have an impact on the quality of service. The better the competencies you have, the better the quality of the services provided. Good service quality will encourage a higher level of community satisfaction. This is supported by research conducted by Apriyanti, Ruhana, and Ahmad (2023) which concluded that "employee competence can have an indirect effect on partner satisfaction through service quality". This means that service quality is able to mediate the relationship between employee competence and community satisfaction.

This is supported by a previous study conducted by Hermawati (2018) with the research title The influence of staff competence, service quality and work discipline on customer satisfaction at the South Makassar Region Revenue Unit 01 office, South Sulawesi Province with the results of this study showing that directly competence has no influence on customer satisfaction, directly service quality has a positive and significant influence on satisfaction customers, directly work discipline has no influence on customer satisfaction, while directly the quality of human resources has no

influence on customer satisfaction. Simultaneously, employee competence, service quality and work discipline have a significant influence on customer satisfaction.

H_6: There is an influence of employee competence on service quality

2.6.7 Use of Technology and Service Quality

The use of technology enables service providers to communicate more efficiently and deliver more consistent, standardized service to business actors, which is expected to translate into measurably higher perceived service quality once licensing processes are digitized and made more transparent (Deku, Wang, & Preko, 2024).

This is supported by evidence that digital government platforms improve perceived service quality primarily by increasing transparency, reducing processing time, and standardizing the information provided to service recipients, effects that are consistently observed across e-government studies conducted in both developed and developing-country contexts (Alkraiji, 2021).

H_7: There is an influence of the use of technology on service quality

2.6.8 Service Responsiveness on Business Actor Satisfaction through Service Quality

The relationship between service responsiveness and business actor satisfaction through service quality illustrates how responsiveness first shapes the perceived quality of service delivery, which in turn determines the satisfaction ultimately experienced by business actors. This sequential pathway implies that responsiveness alone, without a corresponding improvement in overall perceived quality, may fail to translate into measurable gains in satisfaction (Kant & Jaiswal, 2017).

Evidence from public service settings elsewhere similarly finds that responsiveness exerts a weaker effect on satisfaction when service quality itself remains inconsistent, suggesting that responsiveness functions best as one input into a broader quality-based mediating mechanism rather than as an independent determinant of satisfaction (Goumairi, Aoula, & Souda, 2020).

H_8: There is an influence of service responsiveness on business actor satisfaction through service quality

2.6.9 Employee Competence on Business Actor Satisfaction through Service Quality

Employee competence in delivering services has a direct bearing on the quality of service produced, and that quality, in turn, shapes the satisfaction ultimately experienced by business actors. This is supported by research showing that employee competence can exert an indirect effect on partner satisfaction through service quality, indicating that quality is capable of mediating the relationship between competence and satisfaction (Bilderback, & Miller, 2023; Ingsih, Astuti, & Riyanto, 2024). Comparable evidence from public-sector customer satisfaction research further shows that competence-driven improvements in service quality are among the most consistent predictors of downstream satisfaction outcomes, more so than responsiveness alone (Fuchs & Fangpong, 2021).

H_9: There is an influence of employee competence on business actor satisfaction through service quality

2.6.10 Use of Technology on Business Actor Satisfaction through Service Quality

The use of technology can generate both large and small effects on business actor satisfaction depending on how it is implemented. Where internet access is reliable, business actors can manage licensing matters from any location and at any time through a digital platform, without needing to be physically present at the government office, thereby reducing administrative friction and improving perceived service quality, which subsequently increases satisfaction (Alkraiji, 2021).

Where technology adoption remains only partial, however, its effect on satisfaction through service quality tends to be more limited, since inconsistent digital infrastructure and low public familiarity with a given platform can offset the efficiency gains the technology was intended to deliver (Mensah, 2020).

H_{10}: There is an influence of the use of technology on business actor satisfaction through service quality

Based on the development of the theory presented above, the framework of thinking used in this study is as follows:

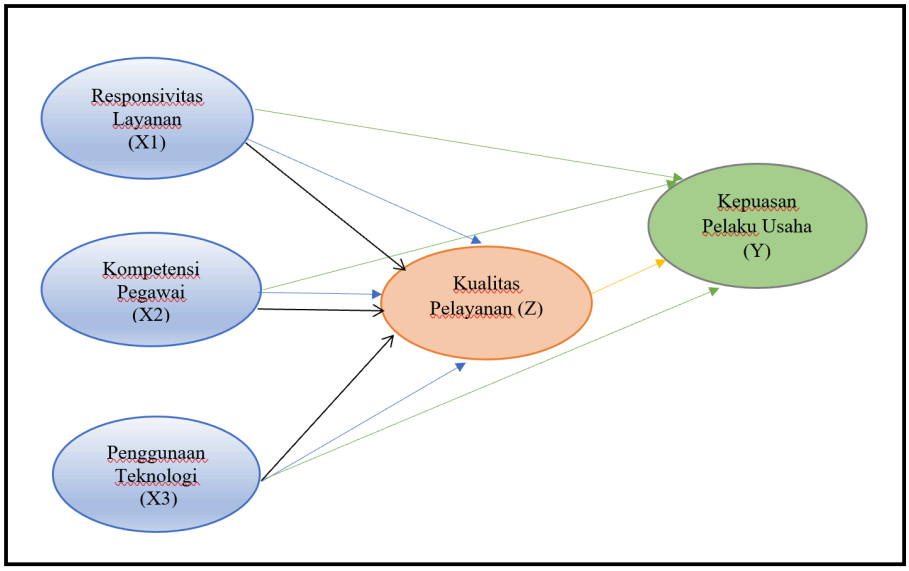

Figure 2. Framework of thought

Figure 2 presents the conceptual framework of the study. The model proposes that service responsiveness, employee competence, and use of technology function as exogenous variables that directly influence service quality and business actor satisfaction. In addition, service quality is positioned as a mediating variable that transmits the effects of these three organizational capabilities on business actor satisfaction. Based on this framework, the study examines both the direct relationships between the independent variables and business actor satisfaction, as well as the indirect relationships through service quality using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach.

3. Methodology

3.1 Population

This study employed a quantitative survey design to examine the influence of service responsiveness, employee competence, and use of technology on business actor satisfaction through service quality at DPMPTSP Karimun Regency. The population of interest comprised business actors who processed Online Single Submission (OSS) and Sicantik licensing applications at DPMPTSP Karimun Regency during the first semester of 2024, from January to June, totaling 1,732 individuals (Sabani, 2021).

Table 1. Details of the Population of Business Actors from January to June 2024

No	Business Actors	Number (people)
01.	OSS Permit	1.489
02.	Sicantik Permit	243
Total	Total	1.732

Table 1 shows that OSS permit applicants account for the large majority of the population at 1,489 business actors, while Sicantik permit applicants comprise a smaller share of 243 business actors, together forming the total population of 1,732 from which the study sample was subsequently drawn.

3.2 Data Collection Techniques

Because surveying the entire population of 1,732 business actors was not practically feasible, a sample of 162 respondents was determined using the Slovin formula with a margin of error of 8%,

and data were collected through a closed questionnaire employing a five-point Likert scale distributed electronically via Google Forms, an approach well suited to capturing perceptual data on service quality and satisfaction from geographically dispersed respondents (Kant & Jaiswal, 2017). Respondents were asked to indicate their level of agreement with statements describing their experience of service responsiveness, employee competence, use of technology, service quality, and satisfaction, with response options ranging from strongly disagree to strongly agree.

Table 2. Research score criteria

No	Score	Research
1	Score 5	Strongly Agree (SS)
2	Score 4	Agree(s)
3	Score 3	Neutral (N)
4	Score 2	Disagree (TS)
5	Score 1	Strongly disagree (STS)

Table 2 presents the five-point scoring criteria applied to each questionnaire item, ranging from a score of 1 for strongly disagree to a score of 5 for strongly agree, providing the numerical basis on which respondents' Likert-scale ratings were subsequently aggregated and analyzed.

3.3 Variable Operational Definition

Careful operational definition of each research variable is necessary to avoid bias in data collection and to ensure that survey items consistently measure the intended theoretical construct across respondents (Hair, Risher, Sarstedt, & Ringle, 2019). Table 3 presents the operational definitions, indicators, and measurement scale used for each of the five latent variables examined in this study.

Table 3. Research variables and operational definitions

Variable	Operational Definition	Indicators	Scale
Service Responsiveness (X_1)	The ability of DPMPTSP to respond to requests, provide services, and resolve complaints promptly and effectively.	Response capability; service speed; service accuracy; attentiveness; timeliness; complaint handling.	Likert (1–5)
Employee Competence (X_2)	The knowledge, skills, attitudes, and personal characteristics required to perform duties effectively and efficiently.	Motives; traits; self-concept; knowledge; skills.	Likert (1–5)
Use of Technology (X_3)	The utilization of technology to improve efficiency, transparency, accessibility, and service quality in licensing and investment services.	Ease of use; data security; transparency; turnaround time.	Likert (1–5)
Service Quality (Z)	The extent to which licensing services meet or exceed the expectations of business actors.	Tangibles; reliability; responsiveness; assurance; empathy.	Likert (1–5)
Business Actor Satisfaction (Y)	The level of business actors' satisfaction with licensing services received from DPMPTSP.	Requirements; procedures; turnaround time; fees; service products; staff competence; staff behavior; complaint handling; facilities.	Likert (1–5)

Table 3 shows that each of the five research variables, service responsiveness, employee competence, use of technology, service quality, and business actor satisfaction, is operationally defined with its own set of indicators measured on a five-point Likert scale, providing the

conceptual and measurement foundation for the validity and reliability testing reported in the following section.

3.4 Reliability Test

Instrument reliability was assessed prior to full-scale structural analysis using Cronbach's Alpha, a widely used internal-consistency coefficient in which values above 0.6 are considered acceptable for social-science survey instruments (Henseler, Ringle, & Sarstedt, 2015). Table 4 presents the reliability test results for each of the five latent variables examined in this study.

Table 4. Reliability test results

Variable	Cronbach Alpha	Result
Business Satisfaction	0.960	Reliable
Service Responsiveness	0.953	Reliable
Employee Competencies	0.972	Reliable
Use of Technology	0.921	Reliable
Quality of Service	0.971	Reliable

Table 4 shows that the Cronbach's Alpha value of all variables exceeds 0.6. These results indicate that each research variable has met the reliability requirement, so it can be stated that each variable exhibits a high level of internal consistency and is suitable for further structural analysis.

presents the research model showing the validity and reliability testing results generated using SmartPLS 3.0 software, illustrating the measurement relationships between each latent construct and its corresponding indicators prior to structural path estimation.

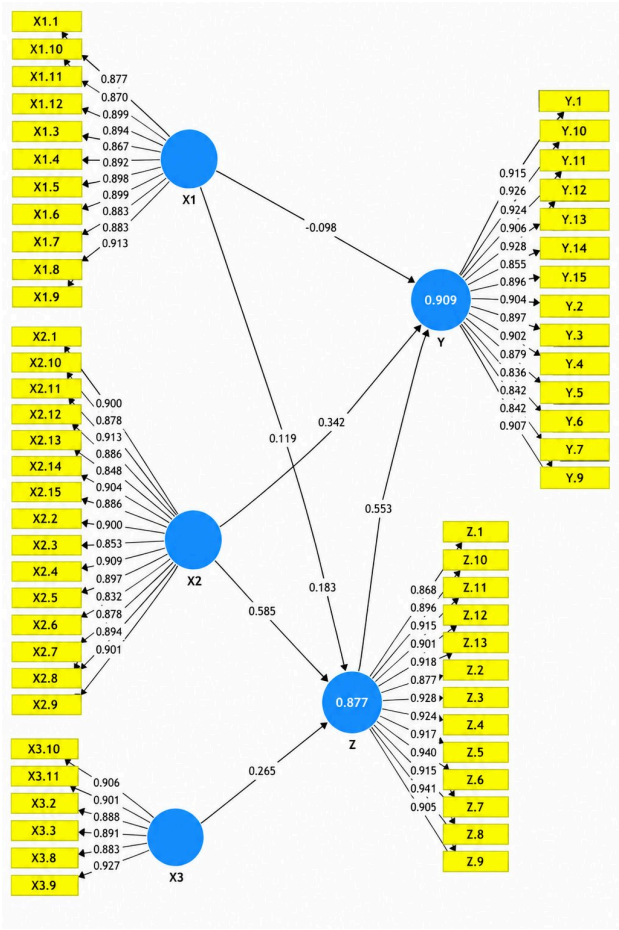

Figure 3. The research model uses SmartPLS software 3

Figure 3 illustrates the measurement relationships between each latent construct, service responsiveness, employee competence, use of technology, service quality, and business actor satisfaction, and its corresponding observed indicators, providing the visual basis for the convergent validity, discriminant validity, and reliability tests reported in Section 4.

4. Results and Discussion

4.1 Profile of Research Respondents

Respondent Profile The study is a description of the 162 (one hundred and sixty-two) respondents sampled in this study, which are distinguished from the gender group, the last education. The following is an overview of the Research Respondent Profile which was used as a sample:

4.1.1 By Gender Group

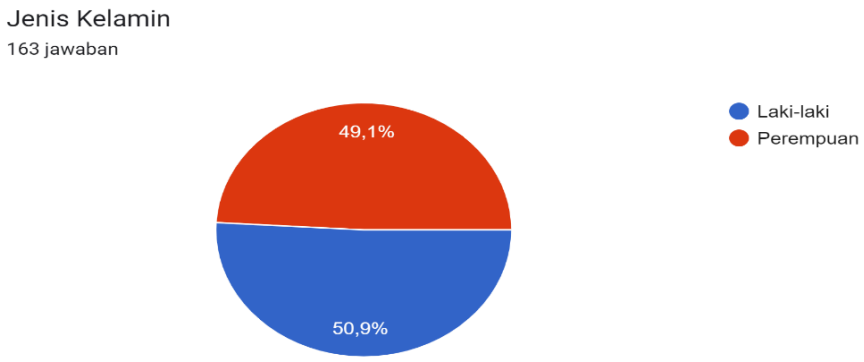

Figure 4. Respondent data by gender

Figure 4 shows that the profile of research respondents based on gender is almost evenly split, though still slightly dominated by male respondents at 83 people or 50.9%, while female respondents number 80 people or 49.1%, indicating that male business actors are marginally more active in service-user activities at DPMPTSP Karimun Regency.

4.1.2 Based on the Last Education Group

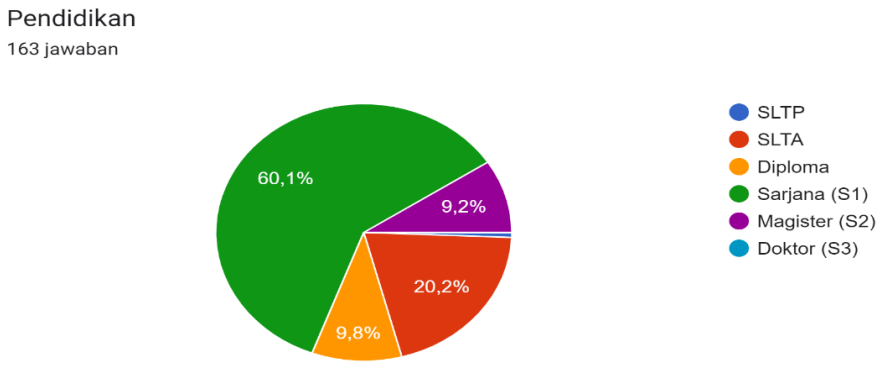

Figure 5. Respondent data based on recent education

Figure 5 shows that, based on respondents' most recent education, 1 person (0.6%) completed junior high school, 33 people (20.2%) completed senior high school, 16 people (9.8%) hold a Diploma (D3), 98 people (60.1%) hold a Bachelor's degree (S1), and 15 people (9.2%) hold a Master's degree (S2), indicating that respondents with a bachelor's degree are the most actively engaged in service-user activities at DPMPTSP Karimun Regency.

4.2 Results of Measurement Model Analysis (Outer Model)

4.2.1 Convergent Validity

The convergent validity test is carried out by looking at the outer loading value of each indicator against its latent variable. An outer loading value of >0.7 indicates that a variable has explained 50% or more of the variance of the indicator. The results of processing with the PLS algorithm for outer loading are presented in the following table:

Table 4. Reliability test results

Variable	Cronbach Alpha	Result
Business Satisfaction	0.960	Reliable
Service Responsiveness	0.953	Reliable
Employee Competencies	0.972	Reliable
Use of Technology	0.921	Reliable
Quality of Service	0.971	Reliable

Table 4 shows that all indicators have an outer loading value greater than 0.7. This indicates that each research variable is well explained by its indicators and meets the requirement of convergent validity.

Table 5. Outer loading value

Variable	Indicators	Outer Loading	Information
Service Responsiveness (X_1)	X_1.1	0.877	Valid
	X_1.3	0.867	Valid
	X_1.4	0.892	Valid
	X_1.5	0.898	Valid
	X_1.6	0.899	Valid
	X_1.7	0.883	Valid
	X_1.8	0.883	Valid
	X_1.9	0.913	Valid
	X_1.10	0.870	Valid
Employee Competencies (X_2)	X_2.1	0.900	Valid
	X_2.2	0.900	Valid
	X_2.3	0.853	Valid
	X_2.4	0.909	Valid
	X_2.5	0.897	Valid
	X_2.6	0.832	Valid
	X_2.7	0.878	Valid
	X_2.8	0.894	Valid
	X_2.9	0.901	Valid
	X_2.10	0.878	Valid
	X_2.11	0.913	Valid
	X_2.12	0.886	Valid

Variable	Indicators	Outer Loading	Information
X_2.13	0.848	Valid	
X_2.14	0.904	Valid	
X_2.15	0.886	Valid	
Use of Technology (X_3)	X_3.2	0.888	Valid
	X_3.3	0.891	Valid
	X_3.8	0.883	Valid
	X_3.9	0.927	Valid
	X_3.10	0.906	Valid
	X_3.11	0.901	Valid
Quality of Service (Z)	Z.1	0.868	Valid
	Z.2	0.877	Valid
	Z.3	0.928	Valid
	Z.4	0.924	Valid
	Z.5	0.917	Valid
	Z.6	0.940	Valid
	Z.7	0.915	Valid
	Z.8	0.941	Valid
	Z.9	0.905	Valid
	Z.10	0.896	Valid
	Z.11	0.915	Valid
	Z.12	0.901	Valid
	Z.13	0.918	Valid
Business Satisfaction (Y)	Y.1	0.915	Valid
	Y_2	0.904	Valid
	Y.3	0.897	Valid
	Y.4	0.902	Valid
	Y.5	0.879	Valid
	Y.6	0.836	Valid
	Y.7	0.842	Valid
	Y.9	0.907	Valid
	Y.10	0.926	Valid
	Y.11	0.924	Valid
	Y.12	0.906	Valid
	Y.13	0.928	Valid
	Y.14	0.855	Valid
	Y.15	0.896	Valid

Table 5 presents the outer model results generated from the PLS algorithm, visually confirming that each indicator loads strongly onto its intended latent construct, consistent with the outer loading values reported in the table.

4.2.2 Discriminant Validity

Fornell Larcker Criterion (FLC) values and cross loadings are commonly used approaches in discriminant validity tests. The value of FLC and cross loadings of an indicator on its own latent construct is expected to be greater than the value of cross loadings on other latent constructs. The results of the discriminant validity test are presented in the following table:

Table 6. Discriminant validity value (fornell-larcker criterion)

	Service Responsiveness	**Employee Competencies**	**Use of Technology**	**Business Satisfaction**	**Quality of Service**
Service Responsiveness	0.889				
Employee Competencies	0.941	0.886			
Use of Technology	0.842	0.859	0.900		
Business Satisfaction	0.871	0.919	0.874	0.895	
Quality of Service	0.893	0.925	0.868	0.941	0.911

Table 6 shows that each indicator has the largest Fornell-Larcker Criterion value on its own latent construct compared to its value on other constructs. This confirms that the indicators used in this study exhibit good discriminant validity in forming their respective variables, each with a value below 0.9.

Table 7. Average Variant Extracted (AVE) value

	Average Variance Extracted (AVE)
Service Responsiveness	0.790
Employee Competencies	0.784
Use of Technology	0.809
Business Satisfaction	0.800
Quality of Service	0.831

Table 7 shows that each latent construct has an Average Variance Extracted value greater than 0.5, confirming that each construct is able to explain 50% or more of the variance of its indicators (Hair, Risher, Sarstedt, & Ringle, 2019; Fornell, & Larcker, 1981).

4.2.3 Composite Reliability

In the SEM-PLS analysis, a construct is declared reliable if it has a composite reliability value of >0.6 and is strengthened by Cronbach's Alpha value of >0.7. The results of the composite reliability test can be seen in the following table:

Table 8. Composite reliability and cronbach's alpha values

	Cronbach Alpha	**Composite Reliability**
Service Responsiveness	0.973	0.976

	Cronbach Alpha	Composite Reliability
Employee Competencies	0.980	0.982
Use of Technology	0.953	0.962
Business Satisfaction	0.981	0.982
Quality of Service	0.983	0.985

Table 8 shows that all variables achieve a good Cronbach's Alpha and Composite Reliability value above 0.7. It is therefore concluded that the variables tested are valid and reliable, so that structural model testing can proceed (Fornell & Larcker, 1981).

4.2.4 Results of Structural Model Analysis (Inner Model)

The measurement of the inner model in this study was carried out through the R-Square test and path coefficient based on the bootstrapping test on the research model. The results of the Bootstrapping Algorithm of this study, are presented in the following table:

4.2.5 R-Square (R2)

The R-Square or Determinant Coefficient value and Q_2 Predictive Relevance or how good the observation value are can be seen in the following table:

Table 9. R-Squares

	R Square	R Square Adjusted
Quality of Service (*Z*)	0.909	0.907
Business Actor Satisfaction (*Y*)	0.877	0.875

Table 9 shows that the R-Square Adjusted value of 0.907 for Service Quality means that 90.7% of the variance in this endogenous variable is explained by the exogenous variables of service responsiveness, employee competence, and use of technology, while 9.3% is explained by other factors outside this study. The R-Square Adjusted value of 0.875 for Business Actor Satisfaction indicates that 87.5% of the variance in this endogenous variable is explained by the same three exogenous variables together with service quality, while 12.5% is explained by other factors outside this study.

Table 10. Model Fit/Model Virtue (NFI Value)

	Saturated Model	Estimated Model
SRMR	0.037	0.037
d_ULS	2.414	2.414
d_G	7.601	7.601
Chi-Square	4745.871	4745.871
NFI	0.733	0.733

Table 10 shows that the Normed Fit Index (NFI) value is 0.733 or 73.3%, above the 0.67 or 67% threshold, so it can be concluded that the goodness of the overall model is strong.

4.2.6 Path Coefficient and Hypothesis Testing

In determining the significance of the influence between variables, it is done in two ways. First, the value of *P* Value < level of significance (Alpha = 5%) or 0.05, if these criteria are met, there is a significant influence between exogenous variables and endogenous variables. Second, significant value can be determined through the value of T statistics at algorithm bootstrapping report. The relationship is said to be influential if it meets the criteria, namely the T-count value (Tstatistics) > 1.96. Test results Path Coefficient with Bootstrapping can be seen in the following table:

Table 11. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
X_1 -> Z	0.119	0.135	0.166	0.720	0.472
X_2 -> Z	0.585	0.567	0.181	3.223	0.001
X_3 -> Z	0.265	0.268	0.080	3.319	0.001
Z -> Y	0.553	0.549	0.095	5.829	0.000
X_1 -> Y	-0.098	-0.105	0.080	1.228	0.220
X_2 -> Y	0.342	0.352	0.115	2.959	0.003
X_3 -> Y	0.183	0.182	0.067	2.724	0.007

Table 12. Specific indirects effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
X_1 -> Z -> Y	0.066	0.073	0.091	0.729	0.467
X_2 -> Z -> Y	0.324	0.313	0.117	2.772	0.006
X_3 -> Z -> Y	0.147	0.147	0.052	2.829	0.005

Table 11 and Table 12 show that the original sample value of the path coefficient for the Service Responsiveness to Business Actor Satisfaction relationship (X_1 -> Y) is negative, indicating that the direction of this specific relationship departs from the otherwise positive pattern observed across the model's other paths.

4.3 Discussion

The path coefficient analysis indicates that Service Responsiveness (X_1) does not significantly influence Service Quality (Z), as evidenced by an original sample coefficient of 0.119, a T-statistic of 0.720, and a p-value of 0.472 ($p > 0.05$). Although the coefficient is positive, the relationship is not statistically significant; therefore, H_1 is rejected. In contrast, Employee Competence (X_2) has a positive and significant effect on Service Quality, with a path coefficient of 0.585, a T-statistic of 3.223, and a p-value of 0.001, supporting H_2. Similarly, Use of Technology (X_3) positively and significantly affects Service Quality ($\beta = 0.265$, $T = 3.319$, $p = 0.001$), indicating support for H_3.

Regarding Business Actor Satisfaction (Y), Service Responsiveness (X_1) does not have a significant direct effect ($\beta = -0.098$, $T = 1.228$, $p = 0.220$), leading to the rejection of H_4. Conversely, Employee Competence (X_2) significantly improves Business Actor Satisfaction ($\beta = 0.342$, $T = 2.959$, $p = 0.003$), thereby supporting H_5. Likewise, Use of Technology (X_3) has a positive and significant effect on Business Actor Satisfaction ($\beta = 0.183$, $T = 2.724$, $p = 0.007$), confirming H_6. Furthermore, Service Quality (Z) exerts a strong positive influence on Business Actor Satisfaction ($\beta = 0.553$, $T = 5.829$, $p < 0.001$), indicating that H_7 is accepted.

The mediation analysis further reveals that Service Quality (Z) does not mediate the relationship between Service Responsiveness (X_1) and Business Actor Satisfaction (Y) ($\beta = 0.066$, $T = 0.729$, $p = 0.467$); therefore, H_8 is rejected. However, Service Quality significantly mediates the effect of Employee Competence (X_2) on Business Actor Satisfaction ($\beta = 0.324$, $T = 2.772$, $p = 0.006$), supporting H9. Likewise, Service Quality significantly mediates the relationship between Use of Technology (X_3) and Business Actor Satisfaction ($\beta = 0.147$, $T = 2.829$, $p = 0.005$), providing support for H_{10}. These findings suggest that while service responsiveness does not directly or indirectly enhance business actor satisfaction, employee competence and technology utilization improve satisfaction both directly and indirectly through enhanced service quality.

4.3.1 The Weak Direct Effect of Service Responsiveness

The finding that service responsiveness exerts only a positive but statistically insignificant effect on service quality, and a negative, non-significant effect on business actor satisfaction, is a striking departure from the theoretical expectation embedded in H_1 and H_4. This pattern suggests that at DPMPTSP Karimun Regency, the speed with which staff respond to requests is not, by itself, sufficient to shape how business actors evaluate the overall quality or satisfaction of the service they receive. This is consistent with evidence from other Indonesian public-service settings in which responsiveness, though conceptually important, is frequently overshadowed by more substantive dimensions of service delivery such as staff competence and technological convenience once these factors are modeled simultaneously (Sabani, 2021). It is also consistent with findings that citizens increasingly evaluate government services on the basis of tangible resolution and technical accuracy rather than on the speed of the initial response alone (Al-Nidawi, Al-Wassiti, Maan, & Othman, 2018).

4.3.2 The Dominant Role of Employee Competence and Use of Technology

In marked contrast to service responsiveness, both employee competence and use of technology exerted positive and statistically significant effects on service quality and on business actor satisfaction, with employee competence showing the single largest path coefficient in the entire model (0.585 on service quality). This finding aligns with evidence that competence-driven service improvements, encompassing technical knowledge, procedural accuracy, and interpersonal skill, are more strongly associated with perceived service quality than responsiveness or infrastructure alone (Kant & Jaiswal, 2017; Boselie, Van Harten, & Veld, 2021). The comparatively smaller but still significant effect of technology use suggests that while digital licensing tools meaningfully improve perceived quality and satisfaction, their contribution remains secondary to the human competence that ultimately determines how effectively those tools are applied in practice (Deku, Wang, & Preko, 2024; Fernanda & Nav, 2020).

4.3.3 Service Quality as a Genuine Mediating Mechanism

The results provide strong support for service quality as a mediating variable. Service quality itself exerted the largest direct effect on business actor satisfaction among all constructs tested (0.553), and it significantly mediated the effects of employee competence (32.4%) and technology use (14.7%) on satisfaction, while its mediation of service responsiveness remained non-significant (6.6%), mirroring the weak direct effect of responsiveness reported above. This pattern indicates that competence and technology influence satisfaction substantially through the quality channel rather than through unmediated, direct paths alone, a finding consistent with mediation evidence from other public and private service contexts in which quality functions as the proximate determinant of satisfaction while upstream organizational capabilities operate mainly by first improving that quality (Khan, Lima, & Mahmud, 2021; Goumairi, Aoula, & Souda, 2020).

4.3.4 Comparison with the Broader Service Quality Literature

These findings both confirm and refine the broader SERVQUAL-informed literature on public service quality. Consistent with classic service-quality theory, this study confirms that quality functions as a central determinant of satisfaction (Fuchs & Fangpong, 2021), yet it also shows that not all antecedents of quality contribute equally, a nuance that aggregate SERVQUAL applications do not always capture. The comparatively weak performance of responsiveness in this study contrasts with findings from private-sector service settings where responsiveness is often among the

strongest predictors of satisfaction (Kant & Jaiswal, 2017), suggesting that the relative importance of SERVQUAL dimensions may be context-dependent, with competence and technological convenience carrying disproportionate weight in a bureaucratic licensing environment where business actors place a premium on getting the outcome right rather than receiving a merely prompt response (Mensah, 2020).

4.3.5 Practical and Managerial Implications

For DPMPTSP Karimun Regency, these findings imply that investment in staff competence, through structured technical training and continuous professional development, together with sustained investment in digital licensing infrastructure, is likely to yield a greater return in terms of service quality and business actor satisfaction than efforts focused narrowly on accelerating response times. This does not mean responsiveness should be neglected, since a minimal acceptable standard of responsiveness remains a precondition for positive service experiences, but it does suggest that the agency's limited improvement resources are better allocated toward competence-building and technology upgrades than toward responsiveness training alone (Sina & Sunarsi, 2021; Alkraiji, 2021).

5. Conclusions

5.1 Conclusion

The first, Service Responsiveness ($X1$) has a positive but insignificant effect on Service Quality (Z) (β = 0.119, T = 0.720, p = 0.472), indicating that improvements in service responsiveness do not directly enhance service quality. Therefore, H_1 is rejected. Second, Employee Competence (X_2) has a positive and significant effect on Service Quality (Z) (β = 0.585, T = 3.223, p = 0.001), demonstrating that higher employee competence contributes to better service quality. Likewise, Use of Technology (X_3) positively and significantly influences Service Quality (Z) (β = 0.265, T = 3.319, p = 0.001), suggesting that technology adoption improves the quality of licensing services. Therefore, H_2 and H_3 are accepted.

Third, Service Responsiveness (X_1) has a negative but insignificant effect on Business Actor Satisfaction (Y) (β = −0.098, T = 1.228, p = 0.220), indicating that responsiveness alone does not significantly influence business actor satisfaction. Consequently, H_4 is rejected. In contrast, Employee Competence (X_2) positively and significantly affects Business Actor Satisfaction (β = 0.342, T = 2.959, p = 0.003), while Use of Technology (X_3) also has a positive and significant effect (β = 0.183, T = 2.724, p = 0.007). These findings indicate that improvements in employee competence and technology utilization increase business actor satisfaction; therefore, H_5 and H_6 are accepted. Fourth, Service Quality (Z) has a positive and significant effect on Business Actor Satisfaction (Y) (β = 0.553, T = 5.829, $p < 0.001$), confirming that higher service quality leads to greater satisfaction among business actors. Accordingly, H_7 is accepted.

Finally, the mediation analysis shows that Service Quality (Z) does not mediate the relationship between Service Responsiveness (X1) and Business Actor Satisfaction (Y) (β = 0.066, T = 0.729, p = 0.467), resulting in the rejection of H_8. However, Service Quality significantly mediates the relationship between Employee Competence (X_2) and Business Actor Satisfaction (β = 0.324, T = 2.772, p = 0.006), as well as between Use of Technology (X_3) and Business Actor Satisfaction (β = 0.147, T = 2.829, p = 0.005). These findings confirm that service quality serves as an effective mediating mechanism through which employee competence and technology utilization enhance business actor satisfaction. Therefore, H_9 and H_{10} are accepted.

5.2 Research Limitations

This study is subject to several limitations. First, it is confined to a single regency-level licensing office, DPMPTSP Karimun Regency, and its findings may not generalize to licensing agencies operating under different regional regulatory or infrastructural conditions. Second, the cross-sectional survey design captures perceptions at a single point in time and cannot establish the causal ordering of the relationships tested with the same rigor as a longitudinal design. Third, all constructs were measured through self-reported perceptions collected via an online questionnaire, which may be subject to common method bias and may under-represent business actors with limited internet

access, a group that is arguably most affected by the technology-related variables examined in this study (Sabani, 2021).

5.3 Directions and Future Study

Future research should extend this study by integrating qualitative interviews with survey data to obtain a deeper understanding of business actors' experiences with licensing services. Future studies are also encouraged to include licensing offices from other regions and incorporate additional variables, such as technology mastery, communication quality, and the emotional intelligence of service personnel, to provide a more comprehensive explanation of business actor satisfaction.

Based on the findings, the Investment and One-Stop Integrated Service Office (DPMPTSP) of Karimun Regency should strengthen employees' digital competencies through continuous training, improve service responsiveness by providing timely and accurate assistance, and continuously update licensing systems in line with technological and regulatory developments. In addition, improving supporting infrastructure, such as internet connectivity and computer facilities, is essential to enhance service quality and increase business actor satisfaction.

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