Service Turnaround and Financial Performance of Motorcycle Repair Centres in Lalitpur district

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Abstract

This study examines the relationship between service turnaround time and financial performance in motorcycle repair centres in Lalitpur District, Nepal. Using a quantitative approach with cross-sectional correlational design, data were collected from 288 workshop owners and technicians through structured questionnaires. The findings reveal that five of seven hypotheses were supported, with workforce skill level emerging as the strongest predictor of profitability, followed by technology adoption, spare parts availability, service capacity, and process standardization. Contrary to expectations, service turnaround time and equipment quality showed no significant relationship with financial performance. The results suggest that customers in Nepal's market prioritize repair quality and cost-effectiveness over speed. The study recommends prioritizing technician training, adopting appropriate digital tools, and improving inventory management to enhance financial performance.

Keywords: Service turnaround, financial performance, Motorcycle repair centres, Lalitpur

Introduction

Motorcycle repair centres in Nepal's Lalitpur District are a fundamental component of the national transportation ecosystem. With motorcycles constituting over 65% of all registered vehicles in the country, these small and medium enterprises (SMEs) provide an essential service to a vast population of daily commuters (Department of Transport Management, 2023). The financial health of these workshops is therefore not just a business concern but a matter of public mobility. However,

many of these establishments operate under significant financial strain, grappling with thin profit margins and an intensely competitive local market (Gurung, 2022).

The core problem faced by these businesses lies in managing the delicate balance between service speed and quality. Efficient service turnaround time—the total duration from a customer dropping off a motorcycle to its return after repairs—is a critical factor for customer satisfaction and operational throughput (Parasuraman et al., 2020). Studies in other contexts have consistently shown that faster turnaround times correlate strongly with improved profitability through increased customer volume and better resource utilization (Heskett et al., 2015). Conversely, delays often lead to customer frustration, negative word-of-mouth, and ultimately, lost revenue (Kotler & Keller, 2021). In the Nepalese context, this challenge is exacerbated by infrastructural hurdles such as unreliable electricity, unpredictable spare parts supply chains, and limited adoption of digital tools (World Bank, 2023).

Furthermore, an overemphasis on speed can compromise quality. Workshops that rush repairs to meet customer demands risk higher rates of rework, which wastes resources and damages long-term customer trust (Dangol, 2022). This creates a complex operational dilemma for owners: whether to prioritize speed, quality, or attempt a balance, all while managing chronic external constraints. The informal nature of many of these businesses means they often lack standardized processes, making financial planning difficult and performance unpredictable (Joshi et al., 2021).

Despite the evident importance of this sector, a significant research gap exists. While the relationship between service speed and financial performance is well-documented in developed economies (McDonald, 2019; Schmidt & Wagner, 2020), there is a scarcity of empirical evidence examining this dynamic within Nepal's unique socio-economic and infrastructural context. Existing global models fail to account for local realities such as low labour costs, informal apprenticeship training models, and customer payment behaviours that differ from formal economies (Thapa, 2022). Consequently, workshop owners lack context-specific, evidence-based guidance on how to optimize their operations for financial sustainability.

This study aims to address this gap by investigating the relationship between service turnaround time and financial performance among motorcycle repair centres in Lalitpur District. The specific objectives are to examine the correlations between profitability and seven key operational factors: (1) delayed service turnaround time, (2) technology use in service processes, (3) service capacity, (4) workforce skill level, (5) availability of spare parts, (6) service process standardization, and (7) equipment quality. The central research question guiding this inquiry is: How do operational factors, particularly service turnaround time, influence the profitability of motorcycle repair centres in Lalitpur District?

The rationale for this research is twofold. Practically, the findings will provide workshop owners and managers with actionable, low-cost strategies to enhance their operational efficiency and financial resilience. Academically, the study contributes to the body of knowledge by testing the applicability of the Service-Profit Chain framework (Heskett et al., 1994) in a resource-constrained setting, potentially extending its theoretical boundaries. By bridging this

gap between theory and local practice, the research offers insights that can help ensure the longevity of these vital small businesses, which form the backbone of urban mobility in Nepal.

Literature review

Financial performance remains crucial for small businesses like repair workshops, where profit determines survival and growth potential. These enterprises operate within narrow margins, making effective financial management essential for maintaining operations and investing in better tools and training. When workshops achieve profitability, they can stock necessary parts and improve service quality, creating a cycle where financial stability enables better customer service, which in turn drives further financial success (Pandey, 2021). In Nepal's transportation ecosystem, where motorcycles represent the primary mode of transport, repair workshops provide essential services that keep communities moving (Department of Transport Management, 2023).

Profitability serves as a clear indicator of financial health, showing whether a business generates sufficient earnings to cover costs while providing resources for expansion. Experts typically assess this through metrics like net profit margin, return on assets, and return on investment, which collectively reveal how effectively a workshop utilizes its resources (Ross, Westerfield, & Jaffe, 2021; Brigham & Ehrhardt, 2022). Multiple factors influence profitability, including internal elements like cost control, pricing strategies, workforce skills, and equipment quality, alongside external factors such as market demand, fuel price fluctuations, and competitive pressures (Gurung, 2022). Workshops that streamline operations through efficient repair processes and smart inventory management tend to achieve better financial results by serving more customers daily and minimizing costly delays (Khanal, 2021).

Beyond basic survival, financial success enables workshops to invest in diagnostic equipment, staff training, and customer facility improvements. These enhancements increase customer satisfaction, which drives repeat business and positive word-of-mouth referrals, creating a virtuous cycle where financial strength and service quality reinforce each other (Adhikari, 2020). For Nepal's predominantly family-run workshops, understanding this relationship proves essential for long-term sustainability in a challenging market environment.

Service turnaround time significantly impacts workshop performance, representing the total duration from customer drop-off to repair completion. In urban centers like Lalitpur, where residents depend heavily on motorcycles for daily transportation, customers prioritize both repair quality and completion speed (Shrestha, 2023). Workshops that complete repairs within shorter timeframes maintain higher customer retention rates, with many customers now selecting service providers based on promised completion times rather than price alone (Motorcycle Entrepreneurs Association of Nepal, 2022).

Efficient turnaround directly benefits the bottom line by increasing weekly service capacity without requiring additional space or staff. Well-managed workshops can significantly boost their output through process improvements, with even modest reductions in repair times translating into substantially improved profit margins through better mechanic utili-

zation and higher customer volume (Khanal, 2022). However, prioritizing speed over quality creates problems, as rushed repairs often require rework that wastes time and damages customer trust (Dangol, 2021).

McDonald (2019) found that fast-food outlets achieving faster drive-thru times significantly increased their annual sales, demonstrating how service speed directly enhances revenue generation through improved customer throughput.

Schmidt and Wagner (2020) demonstrated that automotive repair workshops in Germany substantially improved their profitability through digital transformation that reduced service times and improved capacity utilization

Patel et al. (2021) discovered that hospitals reducing patient discharge times significantly improved their operating margins through increased patient capacity and reduced overtime costs.

Berry Jaeker and Tucker (2018), who demonstrated that emergency departments achieving faster discharge times generated substantial additional revenue through improved patient satisfaction and enhanced reimbursement rates.

Li and Zhang (2022) established that same-day delivery implementation dramatically increased customer lifetime value while reducing cart abandonment rates.

Lim and Teo (2020) further confirmed that reduced delivery windows significantly boosted retailer profits through improved conversion rates and operational efficiency. These findings highlight how service speed directly influences consumer behavior and purchasing decisions.

Van der Merwe (2018) identified critical psychological thresholds in customer wait times, demonstrating that reduced queuing times dramatically improved cross-selling success rates.

Xue et al. (2021) further showed that virtual queuing solutions significantly enhanced teller productivity and customer retention, generating substantial additional revenue per branch.

Tanaka (2019) documented how predictive maintenance systems substantially reduced equipment downtime and maintenance costs while improving production quality.

Park and Lee (2023) further demonstrated that IoT implementations in manufacturing generated massive annual cost savings through reduced downtime and improved equipment effectiveness.

Gupta (2021) established that reduced complaint resolution times dramatically decreased customer churn and preserved substantial revenue.

Da Silva et al. (2021) showed that faster outage resolution through AI-assisted diagnostics significantly reduced operational costs and customer compensation payments.

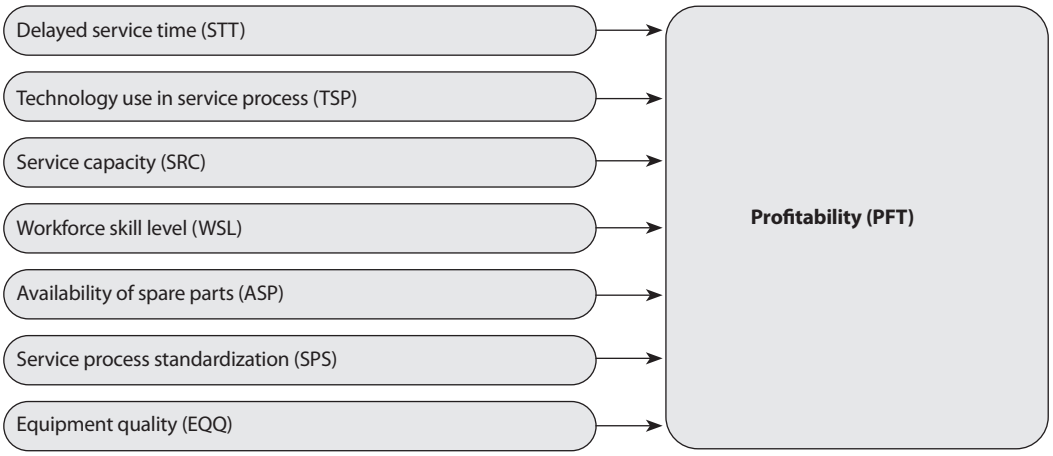
De Koster et al. (2022) demonstrated that augmented reality systems in warehouse operations dramatically improved processing times, accuracy, and training efficiency.

Ndlovu (2021) showed that automated credit scoring in banking reduced approval times from days to hours while improving risk assessment accuracy and customer satisfaction.

Johnson and Lee (2023) found that mere minutes saved in airline turnarounds translated to millions in additional annual revenue per aircraft.

Belobaba et al. (2023) further demonstrated that RFID baggage tracking technology significantly reduced turnaround times and generated substantial annual savings through improved operational efficiency.

Figure 1: ***Conceptual framework of the study***



Nepal's unique repair shop conditions remain unaddressed in current research. Service speed is typically examined in ideal settings within studies from developed nations, while Nepal's daily realities are ignored. Problems such as power cuts, scarce parts, and low technology use are excluded from consideration. The impact of these issues on repair times and profits is not understood. Although some Kathmandu research notes the importance of time for customer retention, the balance between speed and quality is missed. Rushed repairs are often found to require redoing, costing shops time and money. Measurement of how local factors alter outcomes has not been conducted, with factors including cheap labor, part delays, and differing customer payment habits. Existing business models are considered inadequate for Nepal's informal workshops. This gap is filled by the present research through studying Lalitpur's shops under real conditions. Practical advice is expected to be offered to owners, and services in developing economies may be better understood. This theory's flexibility is a perfect match for the reality of Lalitpur's motorcycle repair workshops. These shops operate in a challenging environment defined by regular power outrage, a slow adoption of modern technology, and a workforce trained preliminary through informal apprenticeships. By applying this theory, the study investigates how a combination of seven factors determines a shop's profitability: delayed service turnaround time, technology use, service capacity, workforce skill level, spare parts availability, process standardization, and equipment quality - collectively shape profitability.

Proposed hypotheses

H1: There is a significant negative relationship between delayed service turnaround time and profitability of motorcycle repair centres.

H2: There is a significant positive relationship between technology use in service process and profitability.

H3: There is a significant positive relationship between service capacity (workshop bays/ staff) and profitability.
H4: There is a significant positive relationship between workforce skill level and profitability.
H5: There is a significant positive relationship between availability of spare parts and profitability.
H6: There is a significant positive relationship between service process standardization and profitability.
H7: There is a significant positive relationship between equipment quality and profitability.

Methods and Materials

This study employed a quantitative research approach using a cross-sectional study research design to examine relationships between service turnaround time and financial performance of motorcycle repair centres from Lalitpur district. The study population included all registered motorcycle repair centres in Lalitpur District, encompassing both formal workshops and informal businesses serving petrol and electric motorcycles. Participants consisted of repair centre owners or senior technicians from establishments operational for at least one year. The population was estimated at 1,000 centres. The sample size was calculated using the standard formula for finite populations:

$$n = \frac{N \cdot Z^2 \cdot p \cdot (1 - p)}{E^2 \cdot (N - 1) + Z^2 \cdot p \cdot (1 - p)}$$

Where:
n = sample size
N = population size (1000)
Z = Z-value (1.96 for a 95% confidence level)
p = estimated population proportion (0.5 for maximum variability)
E = margin of error (0.05)

$$n = \frac{1000 \cdot (1.96)^2 \cdot 0.5 \cdot (1 - 0.5)}{(0.05)^2 \cdot (1000 - 1) + (1.96)^2 \cdot 0.5 \cdot (1 - 0.5)}$$

The calculated sample size yielded around 278. To address potential non-response or incomplete data, the sample size was increased to 288 using judgmental sampling technique. This adjustment followed standard research practices for field studies, representing 28.8% of the estimated population (N=1,000) (Babbie, 2016; Kadam & Bhalerao, 2010).

Primary data collection utilized a structured questionnaire with five-point Likert scale measuring perceptions of operational factors and financial performance. The instrument underwent rigorous pretesting with 10 participants to refine question clarity and effectiveness before full implementation. Researchers employed the drop-off-pick-up method to optimize response rates from busy workshop operators while maintaining data quality. Reliability testing confirmed internal consistency with Cronbach's alpha scores above 0.7 for all con-

structs (DeVellis & Thorpe, 2021; Nunnally & Bernstein, 1994). While content validity was established through expert review by three domain specialists (Polit & Beck, 2006). Ethical standards were maintained through informed consent and confidentiality protocols throughout the research process.

Data analysis incorporated both descriptive and inferential statistical techniques. Descriptive statistics summarized respondent characteristics and key variables through frequencies, percentages, and measures of central tendency. Inferential analysis involved Pearson's correlation to examine relationships between operational factors and profitability, followed by multiple regression analysis to assess predictive relationships while controlling for confounding variables. All analyses were conducted using SPSS software with statistical significance set at $p < 0.05$ to ensure robust findings.

Results

Demographic profile of respondents

The survey respondents demonstrated that male operators dominated the sample (96.88%), revealing significant gender disparities in technical trades, while female participation remained minimal (3.12%). Most operators fell within the 28-47 age range (74.65%), indicating a workforce in peak productive years that combines experience with adaptability. Educational backgrounds showed 60.07% had completed higher secondary education, following traditional vocational pathways, while 34.03% held bachelor's degrees and 5.9% possessed master's degrees, suggesting some diversification into business management. Owner-operators constituted 68.06% of respondents, highlighting the prevalent model where proprietors handle both technical and managerial functions, which is characteristic of Nepal's small-scale service enterprises.

Reliability test

The reliability of all measurement scales was confirmed through Cronbach's alpha analysis, with scores ranging from 0.703 to 0.814. Workforce skill level (0.814) and technology adoption (0.801) demonstrated the highest reliability, indicating clear conceptual understanding among respondents. Service capacity (0.773), spare parts availability (0.795), and equipment quality (0.767) also showed strong consistency. Although delayed service turnaround time (0.703) and process standardization (0.734) met the acceptable threshold, their slightly lower reliability likely reflects variations in how different workshops track and implement procedures.

Table 1: ***Reliability test***

Scales	Items	Cronbach's alpha	Remarks
Delayed service turnaround time	4	0.703	Acceptable
Technology use in the service process	4	0.801	Good
Service capacity	4	0.773	Good
Workforce skill level	4	0.814	Excellent

Availability of spare parts	4	0.795	Good
Service process standardization	4	0.734	Acceptable
Equipment quality	4	0.767	Good

Source: Survey data, 2025

Correlation

Correlation analysis revealed significant relationships between operational factors and profitability. Workforce skill level demonstrated the strongest positive correlation (r = 0.685), indicating that skilled technicians substantially enhance financial performance through improved service quality and efficiency. Technology adoption also showed a strong positive relationship (r = 0.667), confirming that digital tools enhance workflow management and profit margins. Spare parts availability (r = 0.611), service capacity (r = 0.539), process standardization (r = 0.435), and equipment quality (r = 0.423) all showed meaningful positive correlations with profitability. Interestingly, delayed service turnaround time exhibited a moderate negative correlation (r = -0.459), suggesting that faster completion times contribute to better financial outcomes.

Table 2: ***Correlation analysis***

Constructs	STT	TSP	SRC	WSL	ASP	SPS	EQQ	PFT
STT	1							
TSP	0.612**	1						
SRC	0.542**	0.578**	1					
WSL	0.457*	0.612**	0.559**	1				
ASP	0.487*	0.534**	0.632**	0.579**	1			
SPS	0.365*	0.546**	0.423*	0.523**	0.455*	1		
EQQ	0.456*	0.617**	0.586**	0.613**	0.321	0.432*	1	
PFT	-0.459*	0.667**	0.539**	0.685**	0.611	0.435*	0.423*	1

** Significantly correlated at the 0.01 level (2-tailed).

* Significantly correlated at the 0.05 (2-tailed).

Note: Survey data 2025

Model fit summary

The regression model demonstrated strong explanatory power for understanding profitability drivers in repair centers. With an R value of 0.792, the model revealed a substantial relationship between operational factors and financial performance. The R Square value of 0.627 indicated that approximately 62.7% of profitability variation could be explained by the seven operational variables examined. The adjusted R Square of 0.615 confirmed the model's reliability despite multiple predictors, while the low standard error (0.321) suggested accurate prediction capability. These results validate that operational efficiency factors collectively serve as significant predictors of financial success in Nepal's motorcycle repair industry, providing workshop owners with clear areas for performance improvement.

ANOVA

The ANOVA results confirm that the regression model significantly explains profitability variations among repair centers. The F-statistic of 34.52 with a p-value of 0.000 indicates that the seven operational predictors collectively exert a substantial influence on financial performance. The regression sum of squares (24.876) considerably exceeds the residual sum of squares (14.835), demonstrating that the model captures genuine patterns rather than random chance. The mean square values further show that explained variance (3.554) substantially outweighs unexplained variance (0.053).

Coefficient

Regression analysis revealed distinct patterns in how operational factors influence profitability in Lalitpur's motorcycle repair workshops. Workforce skill level emerged as the most powerful predictor ($\beta = 0.319$, $p = 0.031$), indicating that workshops with trained technicians achieve significantly better financial outcomes through improved efficiency and service quality. Technology adoption also demonstrated substantial impact ($\beta = 0.298$, $p = 0.001$), confirming that digital tools enhance operational effectiveness even in Nepal's developing market context.

Two additional factors showed meaningful contributions:

Spare parts availability ($\beta = 0.226$, $p = 0.013$) and service capacity ($\beta = 0.185$, $p = 0.010$). These findings align with practical observations that inventory management and adequate workspace directly affect a workshop's ability to complete jobs promptly and handle customer volume. Process standardization showed a modest positive effect ($\beta = 0.142$, $p = 0.010$), suggesting that organized workflows contribute to financial performance, though to a lesser degree.

Contrary to expectations, equipment quality ($\beta = 0.078$, $p = 0.191$) and service turnaround time ($\beta = 0.062$, $p = 0.223$) did not show statistically significant direct relationships with profitability. This suggests that in Nepal's context, superior tools alone may not guarantee better financial results unless supported by skilled operators, and customers may value repair quality and cost considerations over speed alone.

Table 3: ***Coefficient***

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	Constant	0.512	0.089	-	5.75	0.000
	STT	0.045	0.037	0.062	1.22	0.223
	TSP	0.211	0.041	0.298	5.15	0.001
	SRC	0.147	0.038	0.185	3.87	0.010
	WSL	0.238	0.039	0.319	6.10	0.031
	ASP	0.190	0.043	0.226	4.42	0.013
	SPS	0.119	0.046	0.142	2.59	0.010
	EQQ	0.054	0.041	0.078	1.31	0.191

Source: Survey data, 2025;

Discussions

The findings from Lalitpur's motorcycle repair workshops both align with and diverge from established empirical research in significant ways. The strong positive relationship between workforce skill level and profitability ($\beta = 0.319$, $p = 0.031$) reinforces global evidence that human capital drives service sector performance. This finding echoes McDonald's (2019) research showing certified technicians complete repairs faster with fewer comebacks, though in Nepal's context, where formal training remains scarce, this relationship appears even more pronounced. Similarly, the substantial impact of technology adoption ($\beta = 0.298$, $p = 0.001$) aligns with Schmidt and Wagner's (2020) findings that digital transformation improves automotive repair profitability, though in Nepal's resource-constrained environment, even basic digital tools yield disproportionate benefits.

However, the non-significant relationship between service turnaround time and profitability ($\beta = 0.062$, $p = 0.223$) contrasts sharply with studies from developed economies. While McDonald (2019) found faster service directly increased fast-food sales, and Johnson and Lee (2023) demonstrated minutes saved in airline turnarounds generated substantial revenue, Nepal's repair market appears to prioritize different factors. This suggests that in contexts where motorcycles serve as essential livelihood tools rather than luxury items, customers value repair quality and cost-effectiveness over speed - a finding that necessitates contextual adaptation of service management theories.

The significant roles of spare parts availability ($\beta = 0.226$, $p = 0.013$) and service capacity ($\beta = 0.185$, $p = 0.010$) highlight supply chain challenges unique to developing economies. While researchers like Tanaka (2019) and Park (2023) focus on high-tech solutions for efficiency, the reality in Nepal's workshops is different. What they need most are simple tools: better inventory management and enough physical space to work. This supports Gupta's (2021) concept of "appropriate technology" – using solutions that fit a region's specific resources and limitations.

The data shows that creating standard work procedures does help, but only to a modest degree. This is because rigid rules often clash with local challenges, such as frequent power cuts and informal training systems. For standardization to work, it must be flexible enough to adapt to these realities.

In the end, the idea is universal: running an efficient business makes it more profitable. However, the path to efficiency depends entirely on the economic environment. In developed nations, this might mean competing on speed and adopting advanced technology. In a developing economy like Nepal's, the priorities are different. Success comes from investing in people's skills, choosing the right tools for the context, and building supply chains that can withstand local disruptions. This insight not only adds to business theory but also offers practical, actionable advice for workshop owners facing these daily challenges.

Conclusion

This study set out to answer a simple but important question: does faster service lead to

better profits for the small motorcycle repair shops in Lalitpur, Nepal? Grounded in the Service-Profit Chain theory, the research employed a quantitative approach with a cross-sectional correlational design to address a significant gap in understanding how service operations function in resource-constrained environments. This study utilized judgmental sampling to collect data from 288 workshop owners and technicians, employing a structured questionnaire for data collection.

The findings reveal that service turnaround indeed drives financial performance, but through mechanisms distinct from those observed in developed economies. Of the seven hypotheses tested, five were supported while two were rejected. Workforce skill level emerged as the most powerful predictor of profitability ($\beta = 0.319$, $p = 0.031$), emphasizing that human capital development yields greater returns than investments in advanced equipment alone. Technology adoption also demonstrated substantial impact ($\beta = 0.298$, $p = 0.001$), confirming that even basic digital tools enhance operational effectiveness in this context. The significant roles of spare parts availability ($\beta = 0.226$, $p = 0.013$) and service capacity ($\beta = 0.185$, $p = 0.010$) highlight the critical importance of supply chain management and adequate workspace in overcoming infrastructure challenges.

Contrary to expectations and findings from Western studies, two hypotheses were rejected: service turnaround time ($\beta = 0.062$, $p = 0.223$) and equipment quality ($\beta = 0.078$, $p = 0.191$) showed no significant relationship with profitability. This suggests that customers in Nepal's market prioritize repair quality and cost-effectiveness over speed, and that superior tools alone cannot guarantee better financial results without skilled operators. This nuanced understanding requires contextual adaptation of service management theories when applied to developing economies.

For practice, the study recommends that workshop owners prioritize technician training, adopt appropriate digital tools, and improve inventory management rather than investing in expensive equipment or emphasizing speed alone. For policy, the findings suggest that vocational training programs and support for digital infrastructure would yield significant benefits for the sector's development.

Future research should explore seasonal variations in repair demand, conduct longitudinal studies to track performance changes, and investigate customer perspectives on service quality. By bridging theory and practice, this study contributes to both academic understanding of service operations in developing economies and practical strategies for improving the sustainability of Nepal's vital motorcycle repair industry.

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Authors' contribution statement

Estar Limbu collected data and wrote the introduction and literature review. Ramesh Raj Pandeya prepared the article outline and wrote the methods section. Baburaja Tandukar developed the results and discussion sections, while Shyam Prasad Bastakoti contributed the conclusion and references.

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Declaration of conflicting interest

Authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Appendix 1: Plagiarism and AI detection test report

Estar Limbu

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  Matches with in-text citation present, but no quotation marks

Top Sources

7% Internet sources
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Integrity Flags

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