

# Can human lean practices affect business performance? Evidence from Zimbabwe service industries

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Tinotenda Machingura

*Department of Industrial and Systems Engineering,  
Faculty of Engineering Built Environment and IT, University of Pretoria,  
Pretoria, South Africa*

Olufemi Adetunji

*Department of Industrial and Systems Engineering, University of Pretoria,  
Pretoria, South Africa*

Ashleigh Tatenda Muyavu

*Faculty of Applied Science, National University of Science and Technology,  
Bulawayo, Zimbabwe, and*

Catherine Maware

*Faculty of Engineering Built Environment and IT, University of Pretoria,  
Pretoria, South Africa*

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## Abstract

**Purpose** – This research seeks to explore the interrelationships between human lean practices (HLP) and their impact on the business performance of service industries.

**Design/methodology/approach** – A questionnaire was used to collect data from the service industries in Zimbabwe, and 260 valid responses were obtained. The questionnaire was analyzed using structural equation modeling (SEM) in SmartPLS.

**Findings** – Both the managerial human lean practices (MHLP) and employee human lean practices (EHLP) were found to positively impact business performance. Also, the MHLP had a positive relationship with EHLP.

**Research limitations/implications** – The research focused on Zimbabwe's service industry; hence, the results may not be readily adopted by other industries and countries without further investigations.

**Practical implications** – The improvement in business performance is centered on the activities of humans, both the employees and managers. Therefore, organizations should invest more in human resources to enhance their performance.

**Originality/value** – Lean manufacturing (LM) is well known for its adoption in the manufacturing industry; thus, extending it to other sectors requires further research. Although a few studies have investigated the effect of adopting Lean in the service sector, they did not explore the relationship between MHLP and EHLP and the importance of such a relationship toward improved business performance.

**Keywords** Lean manufacturing, Business performance, Service industry, Managerial human lean practices and employee human lean practices

**Paper type** Research paper

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## 1. Introduction

The current business environment is volatile and has a lot of competition, requiring organizations to design strategies to keep abreast with the dynamic, changing environment (Shikulo and Chiromo, 2020). As a result, organizations are urged to implement different technologies and methodologies, and one among them is Lean manufacturing (LM) (Maware and Adetunji, 2019). LM is a methodology aimed at identifying and eliminating wastes in products, processes and services (Maware and Parsley, 2022). These wastes are overproduction, overprocessing, inventory, defects, transportation, motion, non-utilized talent and waiting.

LM is well known for its application in the manufacturing industries since it was introduced to eliminate waste in these industries (Leite *et al.*, 2020). Since its introduction, there has been a growth in the interest in LM as organizations seek to improve their quality, service level, delivery and reduce costs (Abdulameer and Yaacob, 2020). However, LM is not limited to manufacturing processes, as the wastes are also common in support functions such as procurement, invoicing, inventory management, accounting and sales (Cudney and Elrod, 2011). As a result, some service organizations have started to implement LM to improve their service performance.

Some studies have investigated the impact of integrating technical Lean practices with soft Lean practices to enhance performance, for instance Möldner *et al.* (2020). According to Sugimori *et al.* (1977), just-in-time and respect for people are the two fundamental parts of Lean, with an emphasis on employee involvement (EI) in waste reduction. This implies that LM success strongly depends on the workers' abilities, character and devotion in addition to hard skills (Suzuki, 2004). In total, 75% of Lean transformation initiatives fail or face challenges during their integration into production operations (Liker and Rother, 2011) as a result of human issues such as a lack of support from senior management, poor communication or insufficient training (Albliwi *et al.*, 2014).

Studies that have explored the impact of LM on business performance reported diverging results. Nawanir *et al.* (2013) reported that there is a significant improvement in business performance through the implementation of Lean practices. On the other hand, Ali *et al.* (2020) and Panigrahi *et al.* (2023) indicated that the relationship between LM and business performance is not significant. Also, Ledón *et al.* (2018) depicted that Lean has an impact on some business performance measures, such as market performance, but other performance measures, such as financial performance, are not improved. The study by Yang *et al.* (2011) indicated that the relationship between LM and business performance is supported for small enterprises and not for medium and large enterprises, for developed countries and not for developing countries and for European nations and not for non-European nations. As a result, this creates a lot of questions on whether LM can improve business performance or not, thus creating uncertainty among new adopters.

The impact of implementing human Lean practices (HLP) alone was reported by Hernandez-Matias *et al.* (2020) in Spain's manufacturing industry. The study investigated the interrelationship between managerial human Lean practices (MHLP) and employee human Lean practices (EHLP) and their impact on waste reduction and flexibility improvements. In our research, we, however, extend this knowledge by investigating if such an interrelationship exists in service industries. Also, we consider the impact of MHLP and EHLP on business performance instead of operational performance measures. Cudney and Elrod (2011) argued that LM yielded positive results in manufacturing industries; however, expanding it to other industries, such as services, proved difficult and required a lot of tailoring. Thus, the adoption of MHLP and EHLP in the service industry to enhance service performance is yet to be proven, as the Lean practices to use and benefits of such adoptions are not yet clear (Leite and Vieira, 2015). Therefore, unlike the manufacturing industry, the

implementation process in the service sector is haphazard and requires investigation (Cudney and Elrod, 2011).

The research on the adoption of LM in the service sector is still lower than in the manufacturing sector (Leite and Vieira, 2015). Thus, this study will provide a clear picture on whether performance improvements that are witnessed in the manufacturing sector can also be achieved in the service sector. This will shed more light on whether service organizations can benefit from LM implementation, making it easier for them to decide whether to implement it or not. Thus, the confusion brought by inconclusive results is therefore eliminated. Most studies that explored the effect of LM on the performance of the organization focused more on technical Lean practices in the manufacturing sector (Akmal *et al.*, 2022). Given that many organizations prefer technical Lean techniques, such a study will provide a clear picture of the significance of soft Lean approaches. Brah *et al.* (2000) pointed out that the successful implementation of such methodologies depends on top management support, EI and commitment. Hence, organizations that focus only on technical Lean practices risk chances of unsuccessful implementations and may fail to attain the intended performance improvements (Bortolotti *et al.*, 2015).

To address this, the authors used data from Zimbabwe's service industries, unlike Hernandez-Matias *et al.* (2020), who used data from Spain's manufacturing industries. Zimbabwe is a developing country characterized by several economic challenges, including financial challenges that seem to be less prevalent in developed countries such as Spain. Also, in 2019 and 2020, the gross domestic product of Zimbabwe contracted by 8% (World Bank, 2021), and it has been fluctuating for years (Maware and Adetunji, 2020). Currently, Zimbabwe is characterized by a high inflation rate; thus, the socio-economic characteristics differ from other countries, making it difficult to adopt the results obtained in other countries without further investigations. Machingura *et al.* (2023) further highlighted that Lean results differ among countries and industries, and it is difficult to rely on results from other countries or industrial sectors without further research. Thus, this research further investigates the interrelationship between MHL and EHL and their impact on profit, sales and customer satisfaction by addressing the following research questions:

- RQ1. Does the adoption of HLP lead to improvements in business performance of service industries?
- RQ2. Does the implementation of HLP in service industries of a developing country yield improvements in performance as realized by manufacturing industries of a developed country?

The research in the service industry is critical considering that in most countries it contributes over 50% of the gross domestic product (Leite and Vieira, 2015). In Zimbabwe, the service industry accounts for 64% of the country's gross domestic product (Kuwaza, 2016). Thus, it is not sufficient to explore the implementation of Lean in the manufacturing sector alone without considering the service industry.

## 2. Literature review

### 2.1 Lean manufacturing

Around 1990, the word "Lean" was coined to promote waste reduction (Maware and Parsley, 2023). These wastes are regarded as non-value-adding activities, and they need to be eliminated (Machingura *et al.*, 2024). Although Toyota's production is where the Lean methods first appeared, businesses need to adopt them as well (Cudney and Elrod, 2011). Thus, service firms need to consider LM to increase their competitive advantage and reduce expenses (Habib *et al.*, 2023).

### *2.2 Lean manufacturing in the service industry*

As LM originates from the manufacturing sector, it is mostly used by manufacturing companies (Alsmadi *et al.*, 2012). These days, the Lean idea has expanded to include services (Habib *et al.*, 2023) like insurance, information technology, retail, healthcare, government organizations and publishing firms, with the same focus on eliminating waste (Leite *et al.*, 2020). Compared to other services, the financial, banking, health and insurance industries have applied Lean practices the most, while industries such as information technology and military services are behind (Leite and Vieira, 2015). Ciasullo *et al.* (2024) indicated that public service organizations are aware of Lean Six Sigma compared to private ones. Although LM has been applied in the service sector, it has limited success in this industry (Mohd Daril *et al.*, 2023). It is necessary to investigate how Lean may help these organizations attain their goal of improving business performance.

### *2.3 Lean manufacturing and service performance*

LM has the capacity to enhance business performance through the removal of inefficiencies and shortcomings (Blijleven *et al.*, 2019). Kanakana (2013) noted that firms' performance and efficiencies increase as a result of the service sector's use of LM. The study reported that when firms like Taco and McDonalds adopted LM, they increased their competitive edge and productivity performance. Service organizations such as hospitals and education enhanced their competitiveness by adopting Lean practices (Ong *et al.*, 2022). Thus, the correct implementation of LM practices enhances economic performance (Leite and Vieira, 2015). The study by Alshurideh *et al.* (2023) in UAE food services highlighted that LM has an impact on service orders, such as quality, flexibility and speed. Alsmadi *et al.* (2012) also reported improvement in performance due to LM adoption by UK service industries. Other benefits of Lean implementation by the service sector include lowered operational expenses (van Elp *et al.*, 2022), quicker deliveries, reduction of service fees, better quality, lower inventory, higher customer satisfaction (Leite and Vieira, 2015), enhanced profits, reduced delays (Vashishth *et al.*, 2019) and reduced queues (Leite *et al.*, 2020).

### *2.4 Human lean practices and business performance*

HLP focuses on behavioral aspects such as management commitment, involvement of the employees and multi-functional integration (Abdallah *et al.*, 2018; Hernandez-Matias *et al.*, 2020; Al-Hakimi *et al.*, 2023). Bortolotti *et al.* (2015) stated that HLP addresses human resource management, relationships and managerial issues. The term HLP is used in this study to define the soft Lean practices related to human activities, such as EI and EE, management commitment and a culture of continuous improvement used by organizations applying Lean manufacturing.

Several studies indicated that HLP, including employee sharing, cross-functional communication, management commitment and empowerment programs, enhance the success of LM implementation (Al-Hakimi *et al.*, 2023). Möldner *et al.* (2020) added that Lean programs could be more effective at boosting performance when HLPs like skill development, collaboration, teamwork, engagement of employees and management commitment are used. Farris *et al.* (2009) elaborated that HLP such as engagement of the employees in continuous improvement, training of employees and cross-functional teams enhances employee commitment, leading to improved Lean program performance and sustainability. Jun *et al.* (2006) highlighted that the empowerment of employees and cooperation positively influences their satisfaction, enhancing productivity and profit. Thus, employees who have more advanced knowledge and skills and who work as a team are better equipped to produce high-quality goods and services in the most economical manner and improve the competitiveness of the organization (Birdi *et al.*, 2008).

To attain performance improvement, the workers need proper training because motivated employees with limited knowledge or skills may make discretionary efforts with minimal effect on performance (Bonavia and Marin-Garcia, 2011). Management is the fundamental cause of both successful and unsuccessful transformations of Lean adoption, and their behavior should be aligned with Lean (Holmemo *et al.*, 2023). Ong *et al.* (2022) added that an improvement culture, goal-oriented and hands-on approach by the management on Lean aspects positively impacts healthcare performance. The authors added that if management does not focus on EE, the improvement process is derailed. Also, there is a need to emphasize the roles of management and employees toward Lean adoption, as it leads to successful implementation and improvement of business performance. Employee training and support with resources are roles that the management is expected to do while promoting teamwork and a continuous improvement culture lies in the hands of employees (Hernandez-Matias *et al.*, 2020). Thus, without specifying these roles, chaotic implementations may occur, which may lead to failures (Maware and Adetunji, 2019).

### 2.5 Underpinning theory

The research adopted the Lean leadership theory (Ljungblom, 2012; Ong *et al.*, 2022) to assess the impact of LM adoption in the service industry. Bianco *et al.* (2023) highlighted that Lean success depends on skilled and knowledgeable employees, management commitment and strong leadership. Therefore, management should support the improvement culture (Connor and Cormican, 2022) and empower employees to guarantee positive changes (Leyer *et al.*, 2021).

According to Dombrowski and Mielke (2013), Lean leadership consists of five main principles, which are improvement culture, self-development, qualification, Gemba and Hoshin Kanri. Improvement culture seeks perfection and continuous improvement through the involvement of both the management and employees (Aij and Teunissen, 2017). Lean leadership is not about finding answers to problems, but empowering employees (Bianco *et al.*, 2023), understanding their skills and knowledge (Puram and Gurumurthy, 2021) and supporting their proposed problem-solving methods (Ljungblom, 2012). Self-development entails the management acting as role models and applying innate and learned skills (Aij and Teunissen, 2017). They should realize the potential of their subordinates (Connor and Cormican, 2022), communicate with them effectively and coach them to enhance their understanding (Ong *et al.*, 2022).

Employee qualifications encompass EI and EI through learning and those employees who are qualified perform better when involved in lean activities such as problem-solving and continuous improvement than those who are not (Aij and Teunissen, 2017). Gemba entails that Lean leadership should know about shop floor activities, the processes and problems that are dealt with by the employees (Aij and Teunissen, 2017). Therefore, Gemba walks by management enable them to understand the value-adding and non-value-adding processes and show that they support employees and appreciate their efforts (Aij and Teunissen, 2017; Sales and De Castro, 2021). Being on the shop floors also allows management to interact with the employees, get feedback from them and get to know them, hence ensuring that work is done with minimum costs and mistakes (Seidel *et al.*, 2019). Thus, the interaction of management and shop floor workers helps them to improve service delivery and attain enhanced customer satisfaction and continuous improvements (Ong *et al.*, 2022). Finally, Hoshin Kanri focuses on aligning the organization's goal with customer requirements and expectations (Aij and Teunissen, 2017). Although organizations have different teams, leadership should align the goals and coordinate the teams toward the same long-term goal (Barclay *et al.*, 2022).

2.6 Hypothesis development

In order to investigate the effect of HLP on business performance, a second-order structural model was used. The second-order constructs were business performance, MHLP and EHLP. The first-order constructs for business performance were profitability, sales and customer satisfaction. Fostering a Lean culture (FLC) and providing support to Lean (PSL) were first-order constructs for MHLP, while employee involvement (EI) and employee empowerment (EE) were the first-order constructs for EHLP. The business performance first-order constructs were adopted from [Nawanir et al. \(2013\)](#), while the first-order constructs for MHLP and EHLP were adopted from [Hernandez-Matias et al. \(2020\)](#). The model in [Figure 1](#) outlines the proposed relationships amongst these constructs.

*2.6.1 Management lean human practices.* MHLP are Lean practices primarily applied by management such as providing support to Lean and fostering a Lean culture ([Hernandez-Matias et al., 2020](#)). The management sets a culture that makes Lean successful through the development of processes that teach employees about their work expectations ([Januszek et al., 2024](#)). These require management to communicate effectively and train the employees on Lean issues ([Reynders et al., 2022](#)). The management is also expected to provide the necessary support ([Alefari et al., 2020](#)), which includes incentives, bonuses and other necessary resources ([Yamamoto et al., 2019](#)). Hence, participation and commitment of the management are crucial, as the Lean process largely depends on the management.

Lean leadership is important for Lean implementation, as they have the authority in organizations ([Arumugam et al., 2020](#); [Holmemo et al., 2023](#)). They interact with the shop floor workers and encourage them to form cross-functional teams and adopt Lean practices ([Nicholas, 2023](#)). Management shares the objectives, values and principles of the organizations toward LM to influence the attitude of employees towards continuous improvement ([van Assen, 2018](#); [van Elp et al., 2022](#)). They facilitate the training and education of the employees to equip them with skills essential for Lean success ([Ong et al., 2022](#)).

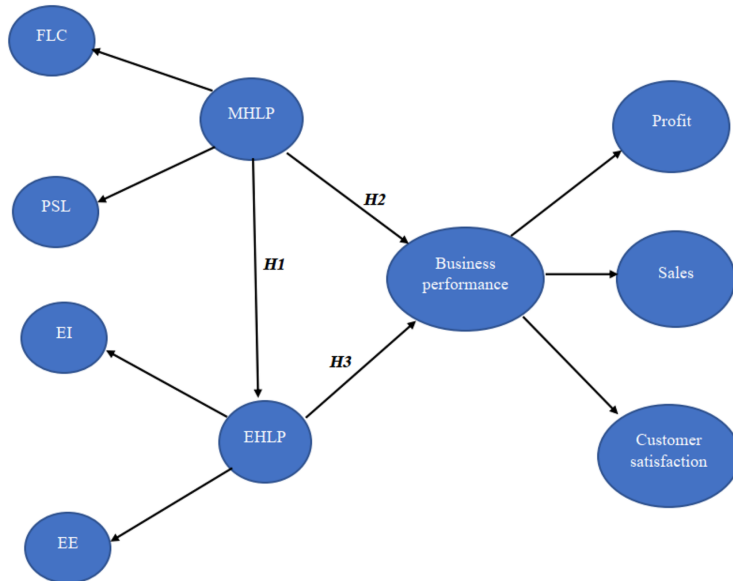


Figure 1.  
A Lean  
measurement model

Source(s): Authors' own work



Basu *et al.* (2018) highlighted that training employees on issues such as problem-solving is an essential Lean aspect. Workers need to be trained to become experts on Lean concepts. The research in Indian manufacturing companies found that Lean leadership positively impacts employee performance (Arumugam *et al.*, 2020). Thus, we hypothesize that

H1. MHLP is positively related to EHLP.

Leadership is key for the successful implementation of LM, as they set goals and introduce changes in the operation of organizations to realize improvement in business performance (Basu *et al.*, 2018; Nicholas, 2023). They provided the resources required for Lean implementation to be a success. Brah *et al.* (2000) applied top management commitment in Singapore's manufacturing industry and found that it improved financial and operational performance. Also, the study by Hernandez-Matias *et al.* (2020) in Spain's manufacturing sector highlighted that MHLP leads to improved flexibility and waste reduction. Thus, LM can enhance business performance by improving profits, sales and customer satisfaction. Therefore, we hypothesize that

H2. MHLP is positively related to business performance.

H2a. MHLP is positively related to profit improvement.

H2b. MHLP is positively related to sales improvement.

H2c. MHLP is positively related to customer satisfaction.

*2.6.2 Employee lean human practices.* EHLP are practices that are related to the employees such as EI and EL. Thus, it is important to involve everyone from top to bottom to create an expert workforce, thereby creating room for continuous improvement. According to Chen *et al.* (2020), one of the Lean pillars is respect for people; hence, they should not be considered like machines but as thinkers. Thus, EHLP seeks to involve people in activities like problem-solving and process improvement toward continuous improvement (Neirotti, 2020). Thus, EHLP can provide a competitive advantage; hence, they are essential to the Lean transformation of a business (Subramanian, 2024). There's a general consensus that the main reasons lean efforts fail are improper application of EHLP and cultural shifts (Wickramasinghe and Wickramasinghe, 2017). In addition, Lopes *et al.* (2023) highlighted that empowerment of the employees is a critical success factor for Lean implementation. It involves giving workers more authority and responsibilities, making them multi-functional to effectively solve problems in the shop floors. An empowered employee is autonomous and can make independent decisions, which is crucial as an organization becomes leaner.

The triumph of Lean implementation relies strongly on the involvement of people (Al Rusheidi and Supian, 2022). Integration of people empowers employees to be effective and efficient, creating room for continuous improvement (Maware and Adetunji, 2019). Employees execute the changes brought about by LM, as they engage in conversation with the clients and build a rapport with them, which helps them comprehend their demands better (Yadav *et al.*, 2020). Employees keep the customers happy by addressing issues on the shop floors. In service industries, employees are very vital as they are a bigger contact point before, after and during service delivery (Kurdi *et al.*, 2020). Quality control by employees removes the root of poor quality and improves customer service (Suzuki, 2004; Hernandez-Matias *et al.*, 2020). Cross-functional activities enable employees to multi-task; hence, they can assist customers with different requests and challenges (Alhelalat *et al.*, 2017). Empowering employees through activities such as Lean training will increase their understanding of the customers' needs and equip them with skills to respond to inquiries and queries, thus increasing customer satisfaction (Chi and Gursoy, 2009). Employees offer explanations to customers for poor service quality and provide solutions, thus improving

customer satisfaction (Bulgarella, 2005). Customers frequently look to the behavior of service personnel when evaluating the quality of service because of the intangible character of services (Hennig-Thurau, 2004).

LM encourages EI, which improves their morale, motivation, participation and effort they put toward customer satisfaction (Machingura *et al.*, 2023). Thus, they deliver a more favorable image of the service offered since they are highly motivated and eager to provide good service. According to Bulgarella (2005), changing the attitude of employees toward Lean significantly improves customer satisfaction. Furthermore, respect for people is essential for the sustainability of the LM program (Basu *et al.*, 2018). The skill development process generates flexible and multi-functional employees who are more creative (Möldner *et al.*, 2020). Therefore, for a successful Lean process, employees should be involved throughout the organization (Basu *et al.*, 2018). Thus, it can be hypothesized that;

*H3.* EHLP is positively related to business performance.

*H3a.* EHLP is positively related to profit improvement.

*H3b.* EHLP is positively related to sales improvement.

*H3c.* EHLP is positively related to customer satisfaction.

Employees are responsible for implementing the ideas set by the management so that the target goals are met. They convey the message from the management to the customers since they interact with customers on the shop floors. Although the management drives the Lean initiatives for the organization, employees are responsible for making sure that these initiatives are implemented and well understood by the customers (Kurdi *et al.*, 2020). Thus, customer satisfaction is derived by employees since they know better the challenges faced by customers and how to address them (Abdirad and Krishnan, 2022). Improving business performance, achieving sustainable profitability and sales and meeting consumer needs are all attainable through employee satisfaction (Hogreve *et al.*, 2017). Thus, it can be hypothesized that

*H4.* The relationship between MHL P and business performance is mediated by EHLP.

### 3. Methodology

#### 3.1 Development of the instrument

A questionnaire was used to investigate the effect of adopting MHL P and EHLP on business performance. The questionnaire contained three sections. Section A focused on the general company information. Section B outlined the adoption level of LM in the service industry. Section C focused on the impact of Lean practices on business performance. The questions were adopted from various authors, as shown in appendix. A five-point Likert scale was utilized in this research. The ratings were 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree and 5 = strongly agree. The questionnaire was first pretested by sending it to academic and industry experts. Some questions were modified, others were discarded and some were added. The final questionnaire was used for the data collection.

#### 3.2 Data collection

In total, 702 questionnaires were randomly distributed across the service industry in Zimbabwe. The authors targeted the service firms registered with the Zimbabwe National Chamber of Commerce. The sampling frame covers people in high positions who could be able to answer the questionnaire and these included the directors, chief executive officers (CEOs), managers, engineers, supervisors and administrative officers. The authors used random



sampling because a large sample is required in structural equation modeling (SEM) (Suryoputro *et al.*, 2020). Also, in random sampling, participants have equal chances of being selected (Gbadago *et al.*, 2017). Additionally, it lessens the impact of uncontrollable factors, which occur when respondents share similar characteristics, and this could distort the results (Emerson, 2015). Random sampling is also impartial, unbiased and representative of the population (Noor *et al.*, 2022). Random sampling was applied by following various steps, starting by defining the population, followed by choosing the sample size, assigning the numbers to the units, using the lottery method to select the sample and finally collecting data from the sample (Setia, 2016). Some questionnaires were hand distributed, while others were sent through a Google Forms link. Numerous follow-ups were conducted via emails, phone calls and social media messaging to boost the response rate, as done by Diabat and Govindan (2011), Jabbour *et al.* (2013), Belhadi *et al.* (2020) and Machingura and Zimwara (2020). Initially, a total of 276 questionnaires were received from the respondents. However, 16 of these questionnaires were rendered invalid as some were incomplete, while others had similar responses for all the Likert-scale questions, and hence, they were discarded. Thus, 260 valid questionnaires were obtained, and the next step was to check if they were adequate or not, and this was done using the 10 times rule described by Hair *et al.* (2021). Since the measurement model had 10 structural paths, the minimum sample size for this research is 100. Therefore, our sample size is far above the threshold value; hence, the sample was considered adequate.

### 3.3 Non-response bias

The possibility of non-response bias was investigated using the early and late response approach described by Armstrong and Overton (1977). The last 20 and the first 20 responses were compared using five randomly selected questionnaire items. A lack of non-response bias was evident in the *t*-test results at a 0.05 significance level, demonstrating no significant difference (Chavez *et al.*, 2022).

### 3.4 Common method bias test

The common method bias test was performed using Harman's single-factor test, as described by Tehseen *et al.* (2017). In total, 10 different factors were produced by the principal component analysis method, and these had a total variance of 59%. The first factor yielded a variance of 33%. Therefore, it can be concluded that there was no common method bias, as the first factor did not have the most variance and also no single factor was produced.

### 3.5 Ethical considerations

Prior to the respondent's involvement in the study, they were all apprised of the objectives of the research, after which the authors acquired their informed consent. The participation was completely optional, and respondents were assured of their confidentiality. The study received approval from the research ethics council at Lupane State University.

## 4. Data analysis

SPSS 26 and SmartPLS 4 were used to analyze the collected data. Descriptive statistics were examined using SPSS, while SmartPLS evaluated and validated the proposed relationships between the constructs through SEM.

### 4.1 Respondent profile

Most of the firms that participated in the survey were from retail, followed by hospitality and petroleum industries. These firms are indicated in Table 1.

TQM 36,9	Type of industry	Number of respondents	%
	<b>422</b>	Retail	154
Hospitality		16	6.2
Real estate		8	3.1
Petroleum		16	6.2
Information technology		14	5.4
Insurance		6	2.3
Pharmaceutical		10	3.8
Education		12	4.6
Transport		8	3.1
Media		4	1.5
Finance		4	1.5
Healthcare services		8	3.1

**Table 1.** Distribution of the service companies  
**Source(s):** Authors' own work

In total, 8.5% of the respondents were directors, 7.7% were CEOs, 57.7% were managers, 2.3% were engineers, 18.5% were supervisors and 5.3% were administrative officers. In total, 10.8% of the respondents had 0–5 years of experience, while 89.2% had more than 5 years of experience. [Huo et al. \(2019\)](#) assert that this experience is sufficient to respond to the questionnaire.

#### 4.2 Assessment of the measurement scale

The measurement scale was analyzed first to ensure the data were suitable for further analysis. Internal reliability and consistency were determined using Cronbach's alpha and composite reliability ([Nunnally, 1978](#)). The results show high reliability and internal consistency, as all the values were  $>0.7$  ([Hair et al., 2021](#)). Convergent validity was determined by the average variance extracted, and all the values were  $>0.5$ , showing that the results were satisfactory ([Fornell and Larcker, 1981](#)). [Table 2](#) indicates the results for the average variance extracted, Cronbach's alpha and composite reliability.

Discriminant validity was assessed using the heterotrait-monotrait (HTMT) ratio. As shown in [Table 3](#), the HTMT values for all were less than 0.85; hence, they were accepted ([Hair et al., 2017](#)).

	Cronbach's alpha >0.7	Composite reliability >0.7	Average variance extracted >0.5
Business performance	0.857	0.888	0.571
Customer satisfaction	0.903	0.926	0.676
Employee empowerment	0.750	0.857	0.666
EHL P	0.866	0.897	0.559
Employee involvement	0.770	0.853	0.594
Fostering a Lean culture	0.788	0.863	0.612
MHLP	0.860	0.893	0.554
Profitability	0.911	0.934	0.740
Providing support to Lean	0.765	0.865	0.681
Sales	0.869	0.911	0.720

**Table 2.** Construct reliability and validity results  
**Source(s):** Authors' own work

	BP	CS	EE	EHLP	EI	FLC	MHLP	P	PLS
CS	0.564								
EE	0.770	0.598							
EHLP	0.755	0.622	0.799						
EI	0.658	0.757	0.703	0.772					
FLC	0.748	0.844	0.769	0.784	0.708				
MHLP	0.603	0.774	0.641	0.686	0.804	0.832			
P	0.627	0.631	0.689	0.504	0.712	0.845	0.686		
PLS	0.596	0.665	0.621	0.834	0.751	0.690	0.722	0.835	
S	0.757	0.803	0.777	0.813	0.718	0.772	0.763	0.780	0.785

**Note(s):** BP – Business Performance, CS – Customer Satisfaction, PR – Profitability and S – Sales

**Source(s):** Authors' own work

**Table 3.**  
HTMT values

#### 4.3 Model assessment

To determine the collinearity among the factors, the variance inflation factor was used, where values between 0.2 and 5 suggest there was no collinearity problem (Hair *et al.*, 2017). Consequently, the obtained variance inflation factor values ranged from 1.311 to 2.984 and were considered satisfactory. Table 4 shows the variance inflation factor results.

The coefficient of determination ( $R^2$ ) values greater than 0.26 are regarded as large, 0.13 as moderate and 0.02 as weak (Cohen, 1988). As shown in Figure 2, the  $R^2$  values of all the constructs were  $>0.26$ , representing a large effect. The path weights indicated that MHLP had a stronger relationship with EHLP compared to business performance and their path weights were 0.654 and 0.472, respectively. Also, business performance had a stronger relationship with MHLP compared to EHLP as indicated by their path weights of 0.472 and 0.245, respectively.

Further model evaluation based on the effect size ( $f^2$ ) and the cross-validated predictive ability test (CVPAT) was conducted. The  $f^2$  values represent the change in  $R^2$  if an exogenous construct is omitted, thus showing the impact of that construct on the endogenous construct. The  $f^2$  of 0.35, 0.15 and 0.02 represent large, medium and small effects, respectively (Hair *et al.*, 2017). As shown in Table 5, MHLP had a large effect on EHLP and business performance, while the relationship between EHLP and business performance was denoted by a medium effect.

CVPAT was used to investigate the model's predictive capabilities. The method compares the average loss of the model to that of the benchmarks (Liengard *et al.*, 2021). If the average loss difference is significantly below zero, it indicates that the model has

Variance inflation factor values

Business performance → Customer satisfaction	1.311
Business performance → Profitability	1.484
Business performance → Sales	1.326
EHLP → Business performance	2.744
EHLP → Employee empowerment	1.666
EHLP → Employee involvement	1.480
MHLP → Business performance	2.984
MHLP → EHLP	1.773
MHLP → Providing support to lean	1.940
MHLP → Fostering a lean culture	1.549

**Source(s):** Authors' own work

**Table 4.**  
VIF values

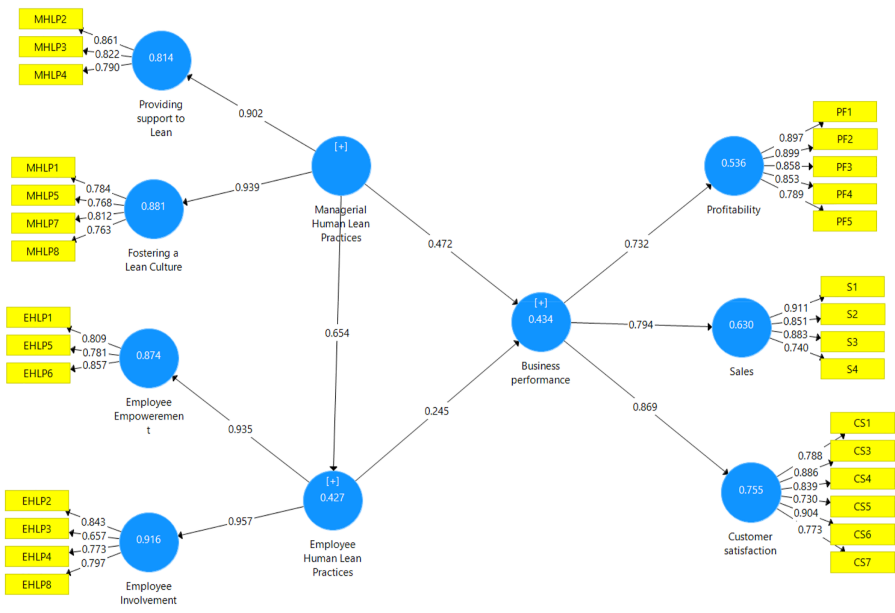


Figure 2.  
SEM model

Source(s): Authors' own work

	Business performance	EHLP
MHLP	0.392	0.746
EHLP	0.225	

Table 5.  
 $f^2$  values

Source(s): Authors' own work

substantive predictive capabilities (Sharma *et al.*, 2022). The results in Table 6 indicate that the model has high predictive capabilities.

The significance of the relationships was determined by the bootstrapping procedure using 5,000 runs (Hair *et al.*, 2017). A  $p$ -value <0.05 and  $t$ -statistics >1.96 are regarded as

	Model loss	Benchmark loss	Average loss difference	$t$ value	$p$ value
Business performance	1.429	1.625	-0.196	2.035	0.043
Customer satisfaction	0.843	1.134	-0.291	4.434	0.000
Employee empowerment	1.302	1.503	-0.201	2.464	0.015
EHLP	0.694	0.954	-0.260	2.342	0.020
Employee involvement	0.704	0.894	-0.190	2.643	0.009
Fostering a Lean culture	0.634	0.876	-0.242	3.084	0.002
Profitability	0.685	0.818	-0.133	2.301	0.023
Providing support to Lean	1.239	1.395	-0.156	2.747	0.006
Sales	0.973	1.104	-0.131	3.701	0.000
Overall	0.935	1.129	-0.194	2.926	0.004

Table 6.  
CVPTA results

Source(s): Authors' own work

significant. Consequently, all the *t*-statistics values were >1.96 and *p*-values were <0.05; hence, all the hypotheses were supported. Thus, both EHLP and MHLP positively impact business performance. The bootstrapping results are shown in Table 7.

4.4 Indirect impacts

The indirect relationships between the constructs were assessed to explore the relations between MHLP and EHLP with profitability, sales and customer satisfaction. The results in Table 8 showed that both MHLP and EHLP have positive impacts on all three performance measures. In addition, MHLP had a stronger relationship with profitability, sales and customer satisfaction than EHLP.

5. Discussion

The research focused on examining the impact of HLP on improved business performance in service industries, unlike previous studies that focused much on technical Lean practices in the manufacturing sector and did not consider the responsibility of employees and management toward successful LM application. These HLPs were grouped into two, namely MHLP and EHLP. In addition, the study further explored the relationship between MHLP and EHLP and their contribution toward successful Lean results. The results indicated that both MHLP and EHLP have a significant impact on business performance in service industries. These HLPs were found to improve the profitability, sales and customer satisfaction of these organizations.

MHLP was found to have more impact on business performance compared to EHLP. Management has more knowledge about business performance as it is more concerned with improving profit, sales and customer satisfaction, while employees are usually less concerned with such issues as their focus is on meeting the target as requested by management. Thus, the success of businesses greatly depends on the support and commitment of the management. The management provides resources required by employees to enable them to drive the implementation of LM. Leadership sets up systems that are customer-centered so that the needs of the customers are always known and always

Effect of	On	Path coefficient	<i>t</i> statistics	<i>p</i> values	Hypothesis	Decision
EHLP	Business performance	0.245	2.019	0.036	H3	Supported
MHLP	Business performance	0.472	3.934	0.000	H2	Supported
MHLP	EHLP	0.654	8.641	0.000	H1	Supported

Source(s): Authors' own work

Table 7. Decision on hypotheses

	Original sample	<i>t</i> -statistics	<i>p</i> -values	Decision
MHLP → BP → CS	0.410	3.523	0.000	H2c is supported
MHLP → BP → S	0.375	3.752	0.000	H2b is supported
MHLP → BP → PR	0.345	3.896	0.000	H2a is supported
EHLP → BP → CS	0.213	1.984	0.041	H3c is supported
EHLP → BP → S	0.195	1.986	0.041	H3b is supported
EHLP → BP → PR	0.179	1.967	0.047	H3a is supported

Source(s): Authors' own work

Table 8. Indirect impacts

addressed. Therefore, leadership strongly affects EI and performance (Al Rusheidi and Supian, 2022). This is supported by various authors who indicated that for Lean improvements to be achieved, support from management is required (Mann, 2005; Laureani and Antony, 2019). Also, the findings are consistent with those obtained by Atkinson (2013), who found that a Lean culture and expert staff are crucial for successful Lean results. Thus, for Lean implementation to be successful and business performance improvements to be realized, there is a need for a culture that promotes Lean transformation.

Hernandez-Matias *et al.* (2020) found that both EHLP and MHLP positively influence the operational performance of Spain's manufacturing industries. This shows that both service and manufacturing industries can implement MHLP and EHLP to attain performance improvement. The results are also supported by other studies done in manufacturing industries. For instance, Shrafat and Ismail (2019) highlighted that Lean adoption improves profitability, market share and customer satisfaction in Jordan's manufacturing sector. Also, Taj and Morosan (2011) concluded that human resource management enhances the flow and flexibility of operational performance measures in Chinese manufacturing industries. Maware and Adetunji (2019) pointed out that EI and EE are key to attain improved performance in the Zimbabwean manufacturing industries.

In the service sector, the results agree with several studies. For example, Suárez-Barraza and Ramis-Pujol (2010) concluded that the adoption of Lean by service organizations helps them improve their service performance. Brah *et al.* (2000) acknowledged that EI, employee commitment and top management support enhance business performance. This is also consistent with Hong *et al.* (2014), who concluded that HLP causes an improvement in operational performance, which eventually leads to enhanced business performance. In service industries, there is great interaction between employees and customers, enabling the employees to understand the expectations of customers and resolve the problems that arise at shop floors and hence keeping the customers happy. By performing multi-tasks, employees are able to address different types of problems and assist different types of customers with a variety of requests. This agrees with Bulgarella (2005), who noted that employees are responsible for explaining any poor service quality to the customer, hence improving customer satisfaction. Thus, leadership should empower employees through training to enhance their skills, as trained employees perform better than untrained ones (Aij and Teunissen, 2017). Also, management should regularly visit shop floors to interact with employees and customers to know them better. When customers are satisfied with the service delivery, they always come back and also refer new customers. Therefore, this can improve sales and hence profits. Thus, for business performance to be improved, organizations should first enhance their MHLP and EHLP.

The study also pointed out that MHLP has a positive impact on EHLP and business performance and that EHLP positively influences business performance. This agrees with the study performed by Hernandez-Matias *et al.* (2020), who found that management has an influence on the performance of employees, which tends to impact the performance of organizations. The results by Nawanir *et al.* (2013) show that both MHLP and EHLP lead to improved sales, customer satisfaction and profitability. The study further agrees with Brah *et al.* (2000), who highlighted that the involvement of the management and their initiatives are vital in improving the performance of organizations. Likewise, empowerment and involvement of employees toward continuous improvement gives them authority to take action that improves financial performance (Iranmanesh *et al.*, 2019). Bulgarella (2005) further supports this by highlighting that a change in employee attitude and empowerment improves customer satisfaction. Yang *et al.* (2011) asserted that LM practices, such as EI, improve business performance measures such as market and financial performance. Hence, for a greater improvement in business performance to be achieved, organizations need to pay attention to both MHLP and EHLP.



It was also found that EHLP mediates the relationship between MHLP and business performance. The direct impact of MHLP on business performance is less than the total impact. Thus, greater performance improvement does not depend on the management only but on the employees as well. This agrees with [Hernandez-Matias et al.'s \(2020\)](#) study that highlighted that for management programs to be successful, they need the inclusion of the employees.

The results also indicated that although both MHLP and EHLP have a positive impact on profit, sales and customer satisfaction, the degree of their influence differs, as shown by their path coefficients. They both have the most impact is on customer satisfaction followed by sales and lastly profitability. This indicates that organizations are striving to improve customer satisfaction, which will result in improved sales and further lead to improvements in profitability. Although the goal of these organizations is to make a profit, they believe that profitability comes as a result of increased sales, and they also understand that sales can only be improved through customer satisfaction. This agrees with several studies that have noted that customer satisfaction is key on improving the performance of companies. According to [Santouridis and Trivellas \(2010\)](#), satisfied customers are loyal, and they reject offers from the competitors, leading to repeated purchases, which influence sales and profitability. [Leite and Vieira \(2015\)](#) also noted that for service organizations to attain improved business performance through LM, they need to pay attention to customer satisfaction since there is a lot of customer involvement in this sector.

## 6. Conclusion, implications and limitations

This study investigated the impact of implementing MHLP and EHLP in the service industries of Zimbabwe. The results of this research indicated that although LM is well known in manufacturing industries, it can also be adopted by the service industry to improve their business performance. Thus, adopting MHLP and EHLP makes organizations improve their business performance. Although much attention is given to the technical Lean practices, ignoring HLP may cause failure in implementing LM and improving business performance. The results agree with those obtained in manufacturing industries, showing that LM benefits both service and manufacturing companies.

### 6.1 Theoretical implications

The study has expanded the area of understanding factors like EI and commitment, managerial support of Lean and fostering a Lean culture, which are part of HLP and common in the service industries. The results show that both MHLP and EHLP are key in improving business performance as they are related to improvement in sales, profit and customer satisfaction. These results are consistent with prior studies that indicated management commitment together with EI as essential for achieving enhanced performance ([Achanga et al., 2006](#)). This study would be able to support the future development of Lean in the service sector and further enhance the performance of Lean services by eliminating waste and attaining better service delivery. Considering the indirect impacts, it can be seen that MHLP has an indirect relationship with business performance mediated by EHLP. This further shows that management is the foundation for successful Lean implementation, but they need employee dedication in embracing the changes brought by Lean. Thus, management can motivate and encourage employees to attain the Lean objectives. This research contributes to the body of knowledge by recognizing the relationship between MHLP and EHLP and their impact on business performance in service industries, unlike most studies that focus on manufacturing industries.

### 6.2 Managerial implications

Management should understand that for successful business performance results to be realized, it starts with them. They should set clear goals, provide resources and train employees. They ought to appreciate that the workers are vital to the success of organizations; hence, they should work hand in hand with employees, involving them in problem-solving and key decision-making and encouraging them to work as a team. Thus, employees are crucial to the success of the business, as they interact with customers daily and understand their needs. Although EI and EE require financial resources, managers should understand that many benefits can be accomplished through empowering employees. Managers are now aware that performance improvement is attained by implementing HLP in both service and manufacturing industries. Thus, it cleared any doubts of those hesitant managers who were unsure how HLP could benefit their service organizations.

### 6.3 Research limitations and future research opportunities

The research was conducted in the service industry of Zimbabwe, a developing country; hence, the results obtained may not apply to other service industries in other countries. Therefore, it would be helpful if such research may be conducted in the service industries of other countries and the results compared to those from this study. Although the results of this study were compared with those obtained from manufacturing industries, it did not include other sectors like construction and agriculture. It is, therefore, important if such research can be done in these sectors and compared the results. Although the research pointed out issues relating to economic performance, it left out other two dimensions of sustainability, which are environmental and social performance. Hence, further research can be done to explore the relationship between HLP and the triple bottom line.

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### Further reading

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### Corresponding author

Tinotenda Machingura can be contacted at: [tmctino@gmail.com](mailto:tmctino@gmail.com)

Employee involvement (EI)	Sources
Suggestions of the team members are considered before making decisions	Machingura <i>et al.</i> (2023)
Our shop floor employees are key to problem-solving	Iranmanesh <i>et al.</i> (2019), Yadav <i>et al.</i> (2020)
Our workers are involved in continuous improvement efforts	Iranmanesh <i>et al.</i> (2019), Bevilacqua <i>et al.</i> (2017)
My firm gives workers a broader range of tasks	Iranmanesh <i>et al.</i> (2019)
<i>Employee empowerment (EE)</i>	
My firm has multi-functional (multi-skilled) workers	Iranmanesh <i>et al.</i> (2019)
At our firm, we have an expansion of responsibility	Iranmanesh <i>et al.</i> (2019)
The employees are encouraged to work together rather than competition	Dal Pont <i>et al.</i> (2008)
<i>Fostering a lean culture (FLC)</i>	
Our workers undergo cross-functional training	Iranmanesh <i>et al.</i> (2019), Yadav <i>et al.</i> (2020)
Our management takes all improvement suggestions seriously	Wickramasinghe and Wickramasinghe (2017)
Leadership develops processes that ensure an understanding of the work	Machingura <i>et al.</i> (2023)
Our leadership develop processes to teach employees about the work to be done and the expected results	Machingura <i>et al.</i> (2023)
<i>Providing support to lean (PSL)</i>	
Our leadership provides the resources required for continuous improvement	Yang <i>et al.</i> (2011)
The management provides incentives, awards and annual bonuses for process improvement	Machingura <i>et al.</i> (2023)
Our leadership encourage activities that improve customer satisfaction	Nawanir <i>et al.</i> (2013)
<i>Sales</i>	
Our market share has increased	Nawanir <i>et al.</i> (2013)
Our sales growth has been outstanding	Nawanir <i>et al.</i> (2013)
Our market share growth has exceeded our competitors	Nawanir <i>et al.</i> (2013)
The percentage sales of new products/services have increased	Ghobakhloo and Hong (2014)
<i>Profitability</i>	
Our profit margin has increased	Nawanir <i>et al.</i> (2013)
Our return on investment has increased	Yang <i>et al.</i> (2011)
Our return on assets has increased	Yang <i>et al.</i> (2011)
Our revenue growth rate has exceeded our competitors	Nawanir <i>et al.</i> (2013)
Our profitability has exceeded our competitors	Nawanir <i>et al.</i> (2013)
<i>Customer satisfaction</i>	
Our customers are satisfied with the quality of our products/services	Nawanir <i>et al.</i> (2013)
Our customers are satisfied with our company's response to enquiries	Nawanir <i>et al.</i> (2013)
Customers are satisfied with our products/services competitive prices	Nawanir <i>et al.</i> (2013)
We are able to offer prices as low or lower than our competitors	Yang <i>et al.</i> (2011)
We have reduced the number of customer complaints	Nawanir <i>et al.</i> (2013)
Our flexibility increased (variety and new products/services and delivery)	Machingura <i>et al.</i> (2023)

**Table A1.**  
Measurement scale