

# **A Stewardship Approach to Manage Safety and Quality Systems: A Case Study**

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## **Abstract**

Stewardship is defined as the careful and responsible management of something entrusted to one's care. It is about doing the right thing even when no one is watching. Stewardship encompasses many day-to-day activities; it is not just about financial reporting only. Every employee act as a steward as they manage the day-to-day affairs. In daily work, employees are faced with tough decisions, to follow complex or considered irrational policies and procedures. Employees are caught between a rock and a hard place to choose whether to get the job done the right way or take the short cut. Sadly, where safety and quality are involved, any miss or error could result in huge financial loss, sometimes even life. This paper studies the stewardship approach, in the case of a manufacturing industry, when executing tasks that affect safety and quality systems, to eliminate safety risks and eradicate quality related losses. It also seeks to demonstrate that stewardship is the cornerstone for business success. A case study and observation exercise were completed using task analysis technique. The results of the tasks studied are shared. The findings presented that violation of stewardship principles has severe consequences to safety and quality systems. The study concluded by implementing the stewardship plan to maintain high stewardship controls in safety and quality management systems.

## **Keywords**

Leadership, Manufacturing industry, Quality, Safety, Stewardship

## **1. Introduction**

Stewardship when integrated into every business activity, delivers sustainable results, protects both the employee and the business. The employee has a set of guidelines to follow, helping them from violating company procedures, whilst the business is protected from losses. The golden rules for stewardship are as follows- the proper 'tone from the top' is essential in creating an effective control environment; good controls are both effective and efficient; understand that controls break down over time due to change in the components of the system and complacency. Under stewardship, the actions taken by management to ensure that operations are effective and efficient; there are proper controls in place to provide guidelines for attaining business goals and targets; reliable and accurate data is recorded and reported with internal and external stakeholders; the business is compliant with all the necessary and applicable laws and regulations. Doing the right thing when executing tasks that affect safety and quality is very crucial. Both areas require a high level of attention to details, care, accuracy, and integrity. Stewardship discipline improves operational efficiency and protects business from various risks. The concept of Stewardship lies in the fact that it excels to achieve both personal

needs and organizational goals (Davis et al., 1997). Leadership incorporate stewardship as a key strategy to drive discipline when executing tasks that affects safety and quality system. Leadership promotes doing the right thing, which comprises of both acknowledgment and reward, and consequences in case a violation occurs. Safety plays a crucial role in business. It is of utmost importance to avoid work related injuries that may lead to excessive costs. The implementation of an efficient safety management system could possibly detect risks, reduce incidents, drive compliance, and maintain safer environment (Fuller et al., 2004). Beyond company or industry environment, the success is also measured using quality of the products that is mainly evaluated by the consumers (Meredith and Shafer, 2011). High quality of products is directly related to the company's reputation. In order to achieve that an effective quality management system should be in place. This also helps the company to achieve good sales and make profits. Good stewards are concerned about data reliability, accuracy, completeness, and integrity. This should go hand in hand with compliance to company procedures, the regulatory and other laws which protects the business. Data manipulation is detrimental to product quality while compliance with laws is detrimental to both safety and quality. Clark (2002) stated that setting values and behaviours that are well aligned with the aspirations and interests of the members of the organization is beneficial.

## **2. Literature Review**

Stewardship view according to Menyah (2013), has advanced to include an intentional obligation to ensure fiduciary duties are upheld. The obligations also includes non-fiduciary duties with ethical responsibility to all stakeholders affected by the decisions, activities and actions taken by the business, acting with care, loyalty, good faith, and confidentiality when serving the other party. Stewardship is the cornerstone of business success. Contrafatto and Bebbington (2013) resonate stewardship to sustainability, responsibility, and accountability. Contrafatto (2014) designates stewardship to maintaining, preserving, and enhancing resources for the benefit of stakeholders. Hernandez (2008), theorized stewardship as a combination of leadership behaviors and actions to endorse personal accountability in employees for long-standing welfare of the business and the communities the business operates in. Leadership role modelling stewardship promotes compliance. Role modelling stewardship in tasks that affects safety and quality systems management reflects that there is a strong alignment of ethics, values, and principles from both parties. The stewardship theory demonstrates ways in which managers' values are in line with that of the business versus pulling to different directions when coming to what it means to do the right thing (Davis et al., 1997).

Employees with high moral standards are highly likely to always choose to do what is right when coming to safety and quality. Their principles are aligned with the integrity value of the company. These employees do not need training on how to behave right. People who back this theory maintain that leaders behave as good stewards, come together to deliver a business need, working towards specific goals and targets. This is the motivation to keep the business running, profitable, productive, innovative for continuity (Vallejo, 2009). Managers as stewards, overseas shareholders' investments always looking out for ways to exploit favorable opportunities (Davis et al., 1997) to grow the business for their benefit too. The active and responsible management of entrusted resources now and in the longer term is described by Goyder (2011) as stewardship. Literature supports the concept that stewardship is a contributor to creating a competitive advantage environment and alleviation of losses. In quality assurance, integrity means keeping the quality promise to consumers. It means establishing procedures to prevent defects and maintain product integrity. If a product does not meet specification, doing the right thing means scrapping or reworking it no matter what the cost is. Product quality cannot be compromised, no matter the value or the cost. Leaders are expected to be promoting an organizational culture that understands the importance of integrity.

In safety management, integrity means telling the truth. An incident occurs, we need to learn from it. Employees plays a significant role during an investigation by telling the truth in terms of what happened. This enables proper root-cause and appropriate preventive actions. It is called having ethics and morals. Bartneck et al., (2021) describes morals as a set of rules, values and norms that determines the employee's actions, and ethics are referred to principles. Stewardship in business seeks to drive ethical behaviour. This is what is needed for business success. Businesses have also seen employees who are results driven, thus choosing to focus on business results at the expense of safety. This indicates the lack of integrity and value misaligned with that of the business. Making ethical safety choices protects not only the employee but the colleagues, business, and shareholder's interests and increases productivity. According to Lahti et al (2002), productivity is the most talked about topic yet so misunderstood. Lekan et al (2013) stated that productivity means quality. In production environment, productivity is measured in volume of packed final products by everyone in a shift (Hanley, 2014). This sometimes puts pressure on employees to bypass stewardship systems to achieve production targets. Both safety and quality losses can be prevented through discipline in stewardship. Once

an issue is discovered, employees must take the right action to contain the issue and prevent a major loss. If employees initially missed discovering the issue, once discovered even if it is late, honesty will help contain the issue and prevent further loss. It can be concluded from the literature review that; safety and quality cannot be separated from stewardship. Stewardship, quality, and safety are inseparable (Figure 1).

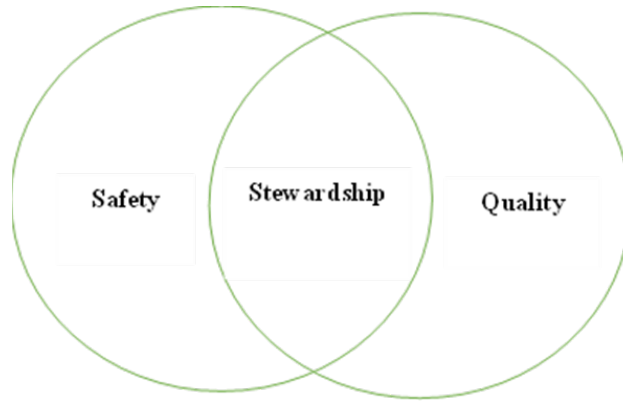


Figure 1. Inseparable stewardship, quality, and safety systems

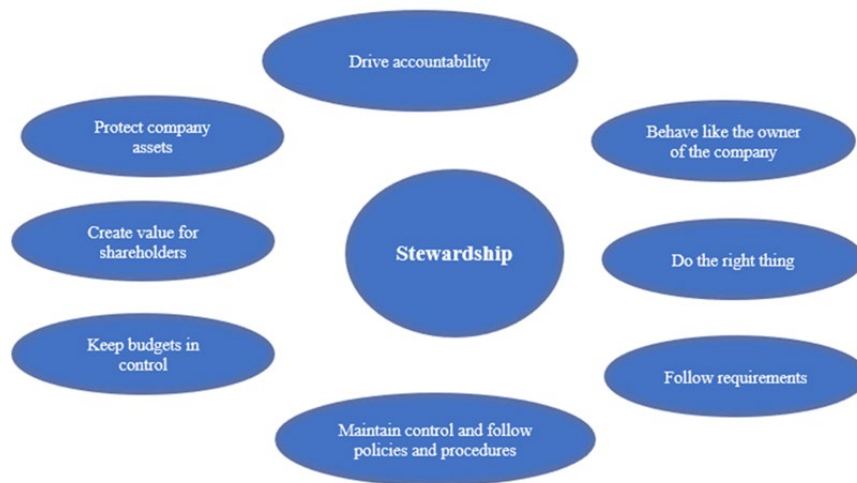


Figure 2. Stewardship scope

As presented in Figure 2, Stewardship scope includes data integrity when reporting, accounting for each asset, the discipline to follow guidelines and protecting the business. The scope discusses all the activities that are aimed at building trust to the company leadership as deliberated below.

It needs to:

**Behave like the owner of the company:** If you were the owner of the company, how will you take care of it. Will you be making the same decisions, mistakes and calls you are making today?

**Do the right thing:** Always strive to do what is right, even when no one is watching and even when under pressure.

**Follow requirements:** This could be country or industry regulatory and legal requirements. Understand them and implement effectively.

**Maintain controls and follow policies and procedures:** Policies and procedures are there to give a guideline and help you understand what you need to do and how to do the job.

Be in control of budgets: Money is key in stewardship. Day to day decisions and activities have financial transactions in them. There is always a budget set, follow.

Create value for shareholders: Shareholders invest in business to get return on investment. Employees has a responsibility to create value for the shareholders by ensuring that the business is profitable. Stewardship, safety, and quality violations attracts penalties, eating off on profitability. Stewardship perception is believed to be about leaders who are considered “organisational actors aiming to balance their obligations to stakeholders inside and outside the organisation while upholding a broader commitment to societal and universal moral norms”, Hernandez (2008).

Protect assets: Assets are all resources the business owns to make money. Drive accountability: Accountability is about doing what you are hired to do at the best of your abilities in an ethical manner, Caldwell et al. (2008).

### **3. Methodology**

In the company of study, it was discovered that there are two set of employees. One set of employees who would not do anything wrong even when faced with a difficult decision or even when executing a complex task. These employees will seek help if not sure about anything. On the other hand, there are employees who took short cut solutions to solve problems even when unpressured, with the belief that they will not be caught. Both set of employees are trained on company policies. The study investigated the consequences of stewardship violation/events because of the actions of the latter set of employees. The methodologies used in this paper are case study and observations using task analysis technique. Task analysis is an observation method dividing goals into subtasks. During the study, observations identified violations during task execution in four areas of the business. The events resulted in financial consequences which were quantified to a value of \$4,575,000 over a four-year period between 2019 and 2022. The stewardship plan was implemented as an intervention strategy to eliminate the risks associated with the losses. 2019 to 2022 data is presented in the study to analyze the frequencies and the costs associated with the losses before the implementation of the stewardship plan, while 2023 is data after implementation of the stewardship plan. The task analysis technique followed steps like task data collection, description, simulation, behaviour assessment, and evaluation (Kirwan, 1992). The four divisions namely production, supply chain, mechanical workshop, and quality lab, have been considered for this study. The most common stewardship risk was failure to follow procedures and data integrity. The violations were listed and linked to one of the risks between “failure to follow procedures” or “data integrity”. All the observed consequences are described, including the cost impact. The last step is introducing the five pillars that will assist employees to comply and maintain stewardship values.

### **4. Results and Discussion**

This part reviews the observations made in the four divisions. Three tasks in each division were studied. It was found that the most common stewardship risks were failure to follow procedures and data integrity. Procedures exist however they are not followed to the latter and data is manipulated. Further investigation revealed that employees are always rushing to complete tasks and taking short cuts. This resulted in stewardship violation impacting quality, and safety systems. As observed, in all violation cases, stewardship is a common risk as shown in Table 1. The analysed tasks by division are listed as follows:

#### Production

- Misrepresentation of production data
- Cleaning, inspections, and lubrication tasks do not follow defined procedures.
- Delay of production machinery maintenance

#### Supply chain

- Misrepresentation of inventory
- Misrepresentation of material expiry dates
- Truck inspections not done properly.

#### Mechanical workshop

- Violation of maintenance timelines
- Not doing maintenance properly
- Replacing machinery with non-original equipment manufacturer parts

#### Quality Lab

- Quality measurements not done according to procedure.
- Not doing quality measurements at all
- Misrepresentation of quality data

The following section outlines the tasks that resulted in serious violation of stewardship in four divisions of the business between year 2019 and 2022. The task analysis technique is applied to assess risky tasks in the division and improve efficiency. First, the divisions with high frequency of risky tasks were defined. The tasks in the study are analyzed in terms of frequency, severity, and risk. Next step, previous four years' data was collected, and classified into two main categories, data integrity and failure to follow procedures.

The violations came at a high cost to the business as observed in this study. The financial loss over the four years between 2019 and 2022 years was \$4,575,000. These losses were avoidable. Table. 2 presents the consequences, financial losses before intervention. The losses are severe except for one event that did not result in a financial loss but confusion and delays.

Table 1. Task analysis

Division	Task that resulted in a violation	Classification	Risk area		
Production	Misrepresentation of production data	Data integrity	Stewardship		
	Cleaning, inspections, and lubrication tasks do not follow procedures	Failure to follow procedure	Stewardship	Quality	Safety
	Delay of production machinery maintenance	Failure to follow procedure	Stewardship	Quality	Safety
Supply chain	Misrepresentation of inventory	Data integrity	Stewardship	Quality	
	Misrepresentation of material expiry dates	Data integrity	Stewardship	Quality	
	Truck inspections not done properly	Failure to follow procedure	Stewardship	Quality	Safety
Mechanical workshop	Violation of maintenance timelines	Failure to follow procedure	Stewardship	Quality	Safety
	Not doing maintenance properly	Failure to follow procedure	Stewardship	Quality	Safety
	Replacing machinery with non-original equipment manufacturer parts	Failure to follow procedure	Stewardship	Quality	Safety
Quality Lab	Quality measurements not done according to procedure	Failure to follow procedure	Stewardship	Quality	
	Not doing quality measurements at all	Failure to follow procedure	Stewardship	Quality	
	Misrepresentation of quality data	Data integrity	Stewardship		

Table 2. Consequences and the cost of stewardship violation (Y2019-2022)

Violation Event	Consequence	Severity/Cost of Loss in \$
Misrepresentation of production data	Poor planning of inventory that resulted in stock runout on shelves	\$500,000
Cleaning, inspections, and lubrication tasks were not according to procedure	Finished product got contaminated, affecting 8-hour production	\$500,000
Delaying maintenance	Machine broke down earlier than expected causing loss of production for 6.5 hours	\$380,000
Misrepresentation of inventory	Poor planning of real available stock causing unexpected changeover	0
Misrepresentation of material expiry dates	Expired material was used for production, 12 hours finished product quality affected	\$705,000
Truck inspections not done properly	Finished product was loaded into a pest infested and wet truck, affecting product quality	\$15,000
Violation of maintenance timelines	Equipment malfunctioned and caused a serious injury to an employee	\$250,000
Not doing maintenance properly	The equipment failed prematurely, there was no replacement part available, and production stopped for 24 hours	\$1,500,000
Replacing machinery with non-original equipment (OEM) manufacturer parts	Machine failed to start up causing a delay in production until OEM delivered the part 5 hours later	\$300,000
Quality measurements not done according to procedure	A defect was not discovered on time resulting in production of defective product for 2 hours	\$125,000
Not doing quality measurements at all	A defect was not discovered on time resulting in production of defective product for 4 hours	\$250,000
Misrepresentation of quality data	Product was released and shipped to the market based on wrong data. The affected product increased complaints.	\$50,000
		<u>\$4,575,000</u>

#### **4.1 Data analysis**

The previous four years data between year 2019 and 2022 is before the implementation of the stewardship plan whereas year 2023 data is after the implementation of the stewardship plan. Data analysed two metrics, namely the frequency and the value/cost/financial consequence of the events in the last four years vs the year 2023 (January until July 2023). During the four years before intervention, there were five events related to data misrepresentation (42%) and seven events due to failure to follow procedures (58%). Year 2023 has only two events, both from failure to follow procedures. The comparison data after intervention is for the last seven months and is considered sufficient to predict future statistics.

##### **4.1.1 The frequency and value of the events**

The frequency and cost of data misrepresentation events are lower than the cost associated with failure to follow procedures. The highest data misrepresentation cost between year 2019 and 2022 was at \$750,000 for expired material

used for production, 12 hours finished product quality affected while the lowest was at 0 for Poor planning of real available stock causing unexpected changeover. The highest cost associated to failure to follow procedures between year 2019 and 2022 was at \$1,500,000, the equipment failed prematurely, there was no replacement part available, and production stopped for 24 hours, whereas an incident of finished product loaded into a pest infested and wet truck, affecting product quality, resulted in \$15,000 loss. In 2023, the two events had a total cost of \$15,000. Figure 3 shows that before the implementation of stewardship plan, 38% of events were data misrepresentation vs 62% of failure to follow procedures.

#### **4.1.2 Analysis before stewardship plan implementation**

The events in year 2019 were three at a total cost of \$1,015,000. Data misrepresentation has the biggest contribution of 99% vs 1% of failure to follow procedures. In the year 2020, the number of events were at four at a total cost of \$1,000,500. 100% of all the events were on failure to follow procedures. In the year 2021, the number of events were three at a total cost of \$1,550,000. One data misrepresentation event had no financial impact. In the year 2022, the number of events were two at a total cost of \$1,000,500. 70% of the events were on data misrepresentation.

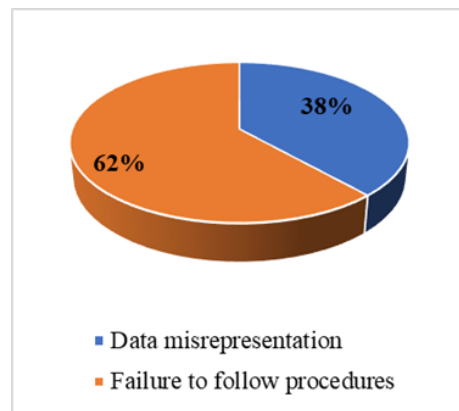


Figure 3. Frequency of events (Y 2019-2022)

#### **4.2 Stewardship plan implementation**

The stewardship plan is a site strategic and practical approach to manage stewardship across all areas of the organization. It is intentional in its nature, requires organisation to put in place clear procedures, disciplinary policies, and leadership oversight. Leadership involvement increases awareness, drives the culture of doing the right thing and create balance whereby noncompliance events go through disciplinary process. The stewardship plan consists of two elements, the five pillars and Leadership oversight.

##### **4.2.1 Five pillars of stewardship**

The first element of intervention plans involved introduction of five pillars of stewardship, as shown in Figure 4. These pillars of stewardship were implemented and approved by Leadership as the cornerstone of the stewardship plan. The pillars are operating procedures, training, behaviours, scorecard, and audits.

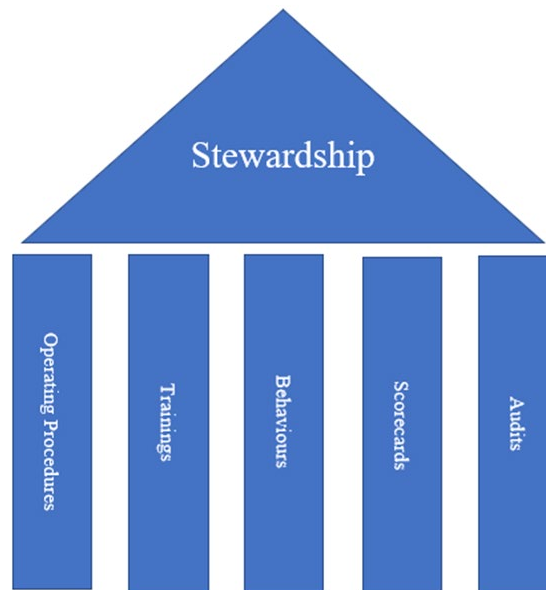


Figure 4. Pillars of stewardship

Operating procedures outlines expectations. Operating procedures must be simple, clear with step-by-step activity. In this study, stewardship, safety, and quality operating procedures are mandatory required trainings to all employees. Once trained, employees are tested on their understanding of the procedures. This is a criterion to confirm that all employees understand their responsibilities. Good behaviours are rewarded to encourage the right culture. The scorecard details the deliverable for each performance measure in a simplified way and helps the business to understand how it is performing. It gives an indication whether the business is on track or not. Internal audits help identify outages and address them timely, whereas external audits are done by external auditors to evaluate compliance to policies and procedures while driving continuous improvement.

#### **4.2.2 Leadership oversight**

The second key element of the stewardship plan is leadership oversight: Leadership oversees daily tasks and guide employees on good operations practices. This drives discipline in execution, and continual improvement and learning of things to do vs things not to do. The oversight included daily direction setting meetings to align on key tasks of the day, potential challenges, and identification of countermeasures for each of the challenge/risk. Leadership creates the culture of high compliance and rewards the people who always do the right thing as encouragement.

#### **4.3 Analysis after stewardship implementation**

The total cost consequence in year 2023, after the stewardship plan implementation is at only \$15,000. Despite the number of events same as year 2022 as shown in Table 3., the magnitude and severity of the loss is insignificant when compared to the annual average of \$1,015,000 from previous years. This turnaround is driven by the focus on stewardship pillars and leadership oversight across the divisions. During the deployment of the intervention strategies, we learned that there is still room for minor events due to manual transactions. Until manual tasks are eliminated, room for error still exist. These errors are unintentional, they are caught early, and a substantial financial loss was prevented. With seven months' time gone in the year 2023, it is certain to conclude that the stewardship plan is successfully implemented to eliminate huge financial loss in the future.

Table 3. Consequences & the cost of stewardship violation (Y2023)

Violation Events	Classification	Consequence of violation	Value of Loss in \$
Missed check of process parameters	Failure to follow procedures	Process out of target resulting in a scrap rate of additional 2% in hours	\$10M
Mix-up of glues	Failure to follow procedures	Mixed 2 different glues in one tank, the glues were discarded	\$5M

## 5. Conclusions

Over the past couple of years, we have seen increased allegations of misrepresentation of data, failure to follow own procedures and poor stewardship examples making headlines. In some cases, product was recalled from the market causing business crisis. In this study, strengthening stewardship through the stewardship plan, prevented further potential business losses. The loss of \$4,575,000 over four years is averaged annually at \$1,143,750. Year 2023 at only two events at a cost of \$15,000 is significantly the lowest at <1% compared to the previous years' average.

The stewardship plan contributed hugely towards this cultural change. The company stock grew by >10 points. Investors gained confidence and the business gained credibility. The learning is that stewardship, quality, and safety operate under the same principles and operating systems, with stewardship as the core value. Establishing working systems will avoid violations. Automating transactions will protect employees from temptation to take short cuts and eliminate room for errors. It was also discovered that there are employees who always behave right, strive to do what is right to protect the business from risks. These employees' values are aligned with that of the business and such behaviours is identified already at hiring stage. There is a clear relationship between stewardship approach and effective management of safety and quality systems. Lack of stewardship has an impact on overall business results, profitability, and productivity. Good stewardship increases morale and motivation. High morale and motivation have a direct relationship with all other business measures. Morale is used to measure engagement metrics within the organization. High morale organizations tend to be productive. Happy employees are very productive, competitive, committed to their work and determined to succeed in their jobs. Creating an environment where each employee can contribute and perform at such high level keeps the entire organization engaged and ensures continuously improving business results. The organization achieved and improved its results in a systemic and sustainable way. Employees are continuously identifying risk elimination ideas in their area of work. They ensure losses are highlighted to their leaders and addressed. Employees are showing high level of ownership, treating the business and its assets as their own.

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## **Biographies**

**Mampsane Dolly Phalane** is a professional with comprehensive experience in leading long term strategic work. She holds a BTech, MTech, and PhD in Industrial Engineering, BCom Finance & Investment and MBA. She has proven success in leading quality, manufacturing, stewardship, engineering, health/safety, and integrated work systems. She has been recognized for sustaining culture of awareness, inquisitiveness, and persistence for improvements in her current role where she works as Director of Manufacturing Quality Assurance and Internal Controls for a multinational consumer goods company. She was honored with a Techwomen award by Hilary Clinton for her role in mentoring girls in STEM.

**Kapil Gupta** is working as Professor at University of Johannesburg, South Africa. He obtained PhD in Mechanical engineering. He has over ten years of professional experience. He has authored more than hundred research and review articles. He has also authored and edited twenty international books. His area of specialization is advanced manufacturing and modern industrial engineering. He has carried out research projects in lean manufacturing, six sigma, sustainable manufacturing, modern machining, and materials engineering. He is holding positions on the editorial boards of international journals. He has supervised six doctorate and fourteen masters students and hosted five postdoc fellows.