Effective Shop Floor Management – The Ultimate in Better Employees – Employer Relationship

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I Introduction to Shop Floor Management

Shop Floor Management (SFM) refers to the methods, systems, and tools used to manage and control the production activities where the actual manufacturing takes place — typically the area in a factory or workshop where workers, machines, and materials come together to produce goods.

Shop-floor control (SFC) is an important element in managing manufacturing system operations in order to faithfully execute production plans. In this article, the functions and challenges encountered in typical SFC systems are presented along with their evolution from classical centralized approaches to more distributed approaches (Tentesaux & Prabhu, 2013).

Key Objectives of Shop Floor Management

1. **Improve Productivity:** Ensure that resources (labor, materials, and machines) are used efficiently.
2. **Ensure Quality:** Monitor production to maintain quality standards.
3. **Enhance Visibility:** Provide real-time data and transparency about ongoing operations.
4. **Reduce Waste:** Implement lean practices to minimize waste in time, material, and effort.
5. **On-time Delivery:** Maintain schedules and deadlines to meet customer expectations.

Core Components of Shop Floor Management

1. **People Management:**
    - Training, allocating, and supervising workers.
    - Enhancing engagement and accountability.
2. **Production Planning & Control:**
    - Scheduling jobs, assigning tasks, and managing workloads.

3. **Performance Monitoring:**
    - Using KPIs (Key Performance Indicators) like OEE (Overall Equipment Effectiveness), downtime, defect rates, etc.
4. **Communication Systems:**
    - Daily stand-up meetings, digital dashboards, and andon systems (visual alerts) to improve information flow.
5. **Technology Integration:**
    - Use of MES (Manufacturing Execution Systems), IoT devices, and ERP systems to streamline operations.

Benefits of Effective Shop Floor Management

- Increased operational efficiency.
- Enhanced product quality.
- Better workforce coordination.
- Faster response to production issues.
- Continuous improvement through data-driven insights.

Modern Trends in Shop Floor Management

- **Digital Transformation:** Integration of smart sensors, AI, and data analytics.
- **Lean Manufacturing:** Focus on eliminating waste and improving flow.
- **Agile Practices:** Quick adaptations to changing demands.
- **Sustainability Focus:** Reducing environmental impact in operations.

Shop Floor Management is essential for operational excellence in manufacturing. By aligning people, processes, and technologies, it enables manufacturers to deliver high-quality products efficiently and competitively. Whether in traditional industries or smart factories, SFM remains the backbone of effective production management.

II Understanding Employee – Employer Relationships

The **employee–employer relationship** is a fundamental aspect of any organization. It defines how workers and management interact, cooperate, and fulfill their respective roles and

responsibilities. A healthy relationship between employees and employers is crucial for organizational success, employee satisfaction, and long-term business sustainability. Discrimination against women may take the form of preferring similarly qualified men, or the complementary form of preferring women for certain jobs, but for their supposed negative qualities such as being willing to tolerate boredom or accept low pay. Larger employers are unlikely to make explicit bargains with individuals or small groups (Freeman, 1982).

Key Elements of the Employee–Employer Relationship

1. **Contractual Agreement:**
    - At its core, this relationship is legally defined through an employment contract.
    - Outlines job roles, responsibilities, compensation, benefits, working hours, and termination clauses.
2. **Mutual Expectations:**
    - **Employers** expect productivity, commitment, and adherence to policies.
    - **Employees** expect fair treatment, job security, opportunities for growth, and respectful communication.
3. **Communication:**
    - Open, honest, and consistent communication builds trust and understanding.
    - Mechanisms like feedback systems, meetings, and suggestion boxes support this.
4. **Trust and Respect:**
    - Trust is the foundation of collaboration and accountability.
    - Respecting diverse views, contributions, and backgrounds strengthens workplace culture.
5. **Compliance and Rights:**
    - The relationship is governed by labor laws, regulations, and organizational policies.
    - Both parties must understand their rights and responsibilities (e.g., non-discrimination, minimum wage, safe working conditions).

Types of Employees–Employer Relationships

1. **Transactional Relationship:**
    - Focused mainly on the exchange of work for pay.

- Often short-term and task-oriented.

2. **Relational (or Long-Term) Relationship:**
    - Built on loyalty, development, and long-term engagement.
    - Encourages mutual growth and shared goals.
3. **Legal Relationship:**
    - Defined by law through contracts and employment legislation.
4. **Psychological Contract:**
    - Unwritten expectations between employee and employer.
    - Includes perceived fairness, recognition, and job satisfaction.

Importance of a Healthy Employee–Employer Relationship

- **Increased Productivity:** Motivated employees tend to perform better.
- **Higher Retention:** Satisfied employees are less likely to leave.
- **Improved Morale:** Respect and communication foster a positive work environment.
- **Reduced Conflict:** Clear roles and expectations prevent misunderstandings.
- **Better Organizational Reputation:** A healthy internal culture enhances external perception.

Building and Maintaining a Strong Relationship

1. **Leadership Support:** Managers should be approachable, empathetic, and consistent.
2. **Employee Engagement:** Involve employees in decision-making and innovation.
3. **Training and Development:** Invest in employee growth and upskilling.
4. **Recognition and Rewards:** Appreciate good work with praise, promotions, or incentives.
5. **Conflict Resolution Mechanisms:** Handle disputes fairly and promptly.

The employee–employer relationship is more than a legal arrangement; it is a dynamic partnership built on communication, trust, and mutual respect. Organizations that invest in strong relationships with their employees are more likely to experience growth, innovation, and long-term success.

III Key Principles of Shop Floor Management

Shop Floor Management is driven by several core principles that help ensure efficiency, quality, and continuous improvement in manufacturing operations. These principles provide the foundation for managing day-to-day production activities and aligning them with broader business goals.

The research findings have acted as a proof of process for the introduction of Visual Management (VM) theory into the design of communications boards and provide evidence that the VM principles improved the design of the board. This enabled Team Leaders to better engage in problem-solving and continuous improvement with their teams (Bateman et al., 2016).

1. Transparency and Visibility

- **Purpose:** Make all activities on the shop floor visible to managers and workers.
- **How it's applied:**
    - Use of visual management tools like boards, charts, and dashboards.
    - Real-time data tracking of production metrics.
- **Benefit:** Helps identify issues quickly and facilitates faster decision-making.

2. Standardization of Work

- **Purpose:** Ensure consistent execution of tasks to maintain quality and reduce variability.
- **How it's applied:**
    - Develop standard operating procedures (SOPs) for every process.
    - Train employees to follow these standards consistently.
- **Benefit:** Reduces errors, improves safety, and simplifies training.

3. Continuous Improvement (Kaizen)

- **Purpose:** Foster a culture of ongoing, incremental improvements.
- **How it's applied:**
    - Encourage employee suggestions.
    - Conduct regular problem-solving and improvement activities.

- **Benefit:** Enhances efficiency, reduces waste, and improves morale.

4. Problem Solving at the Source

- **Purpose:** Address issues where and when they occur.
- **How it's applied:**
  - Empower workers to stop production and fix problems.
  - Use root cause analysis tools like the 5 Whys or Fishbone diagrams.
- **Benefit:** Prevents recurring issues and improves product quality.

5. Leadership Presence on the Floor (Gemba Walks)

- **Purpose:** Ensure managers understand real-time conditions by observing work directly.
- **How it's applied:**
  - Managers regularly visit the shop floor (Gemba) to engage with workers and observe processes.
- **Benefit:** Builds trust, encourages open communication, and uncovers improvement opportunities.

6. Teamwork and Employee Involvement

- **Purpose:** Leverage the knowledge and experience of frontline workers.
- **How it's applied:**
  - Create cross-functional teams to solve problems.
  - Involve workers in goal setting and performance review.
- **Benefit:** Increases ownership, motivation, and innovation.

7. Data-Driven Decision Making

- **Purpose:** Base actions on facts rather than assumptions.
- **How it's applied:**
  - Monitor Key Performance Indicators (KPIs) like OEE, cycle time, defect rates, etc.
  - Use digital tools to collect and analyze performance data.

- **Benefit:** Leads to better decisions, more effective improvements, and fewer surprises.

8. Flexibility and Responsiveness

- **Purpose:** Adapt quickly to changes in demand or production issues.
- **How it's applied:**
  - Cross-train employees.
  - Implement Just-in-Time (JIT) and lean systems.
- **Benefit:** Reduces downtime and improves customer responsiveness.

The key principles of Shop Floor Management focus on visibility, standardization, continuous improvement, and employee empowerment. When these principles are properly implemented, they create a productive, agile, and high-quality manufacturing environment that supports long-term success.

IV The Role of Leadership in Shop Floor Management

Leadership plays a **critical and transformative role** in effective shop floor management. While systems, tools, and technologies are important, it is the behavior and decisions of leaders that ultimately shape the culture, productivity, and efficiency of the shop floor.

Human Resource Management issues are a crucial factor in the effective implementation of tools and practices in the field of Quality Management. Our study addresses this issue by considering the existence of complementarities between Process Control (PC) and two shop-floor leadership practices (i.e. Shop-Floor Contact (SFC) and Supervisory Interaction Facilitation (SIF)), directed to promote contact and interaction between middle managers and supervisors with blue collar workers to explain quality performance, which is measured by Quality of Conformance (QC) and Customer Satisfaction (CS) (Bello-Pintado et al., 2018).

1. Setting Vision and Direction

- **Role:** Leaders define the strategic goals and ensure they are clearly communicated to the shop floor team.
- **Impact:** Aligns daily operations with broader organizational objectives, such as quality improvement, lean manufacturing, or on-time delivery.

2. Leading by Example (Gemba Leadership)

- **Role:** Effective leaders practice "Gemba walks" — regularly visiting the actual place where work happens.
- **Impact:** Builds credibility, improves problem understanding, and encourages open communication with frontline workers.

3. Empowering Employees

- **Role:** Leaders create an environment where employees feel responsible and valued.
- **How:**
    - Delegate decision-making where appropriate.
    - Encourage participation in problem-solving and improvement activities.
- **Impact:** Boosts morale, accountability, and innovation on the shop floor.

4. Ensuring Discipline and Standardization

- **Role:** Enforce adherence to Standard Operating Procedures (SOPs), safety rules, and quality checks.
- **Impact:** Maintains process consistency, reduces variability, and upholds safety and quality standards.

5. Facilitating Communication

- **Role:** Leaders must ensure smooth, two-way communication between workers and management.
- **How:**
    - Conduct daily briefings or stand-up meetings.
    - Use visual management tools and feedback systems.
- **Impact:** Enhances coordination, reduces misunderstandings, and speeds up problem resolution.

6. Driving Continuous Improvement

- **Role:** Cultivate a Kaizen culture where everyone looks for ways to improve.
- **How:**
    - Encourage suggestions from staff.

    - Support improvement projects and provide resources.
- **Impact:** Sustains long-term competitiveness and operational excellence.

7. Performance Monitoring and Coaching

- **Role:** Regularly track KPIs (e.g., OEE, downtime, defect rates) and guide teams on improving performance.
- **Impact:** Builds a performance-driven culture with continuous feedback and development.

8. Managing Change

- **Role:** Lead the team through transitions such as lean implementation, digitalization, or production scale-up.
- **How:**
    - Provide training, clear communication, and emotional support.
- **Impact:** Reduces resistance and ensures smoother adoption of new processes or systems.

Leadership on the shop floor goes beyond supervision — it involves **engagement, vision, accountability, and empowerment**. Strong leaders inspire their teams, create a culture of continuous improvement, and ensure that the shop floor operates as a well-coordinated, efficient, and responsive unit. Without effective leadership, even the best shop floor systems can fail to deliver their full potential.

V Training and Development for Shop Floor Employees

Training and development are essential components of **workforce effectiveness** on the shop floor. They ensure that employees have the skills, knowledge, and mindset needed to perform their roles efficiently, safely, and with a focus on continuous improvement.

Manufacturing companies have to cope with a rising number of product variants as well as ageing personnel due to the demographic change. These challenges require companies to develop their employees' competencies – problem solving competencies in particular – especially on the shop floor. In order to support a value-driven material flow, shop floor management systems have been introduced in many manufacturing environments. The integration of a competency management system that continuously develops problem solving competencies through shop floor management seems to be a promising approach (Christian et al., 2016).

Objectives of Training and Development

1. **Skill Enhancement:** Equip employees with the technical skills needed for specific machines, tools, or production processes.
2. **Quality Improvement:** Reduce errors and rework by improving understanding of quality standards and procedures.
3. **Safety Awareness:** Promote safe working practices to reduce accidents and health hazards.
4. **Adaptability:** Prepare workers to handle new technologies, processes, or products.
5. **Employee Engagement:** Increase motivation and job satisfaction through personal and professional growth opportunities.

Types of Training for Shop Floor Employees

1. **On-the-Job Training (OJT):**
    - Conducted directly at the workstation.
    - Practical, hands-on, and immediate.
    - Often involves mentoring by experienced workers.
2. **Technical Training:**
    - Covers machinery operation, maintenance procedures, tool handling, and production techniques.
    - May be offered by internal trainers or equipment manufacturers.
3. **Quality and Process Training:**
    - Focuses on standards such as ISO, Six Sigma, or Total Quality Management (TQM).
    - Helps workers understand how their roles impact product quality.
4. **Health and Safety Training:**
    - Includes training on hazard identification, PPE usage, emergency procedures, and first aid.
    - Often mandated by law or industry regulations.
5. **Soft Skills Training:**
    - Covers teamwork, communication, time management, and problem-solving.
    - Helps build better interpersonal relationships and workplace cooperation.
6. **Cross-Training:**

- Enables employees to perform multiple roles or operate different machines.
- Increases workforce flexibility and reduces production disruptions.

Development Strategies

1. **Structured Training Programs:**
   - Use a clear training calendar with defined objectives, timelines, and evaluation methods.
2. **Mentorship and Coaching:**
   - Pairing less experienced workers with skilled mentors for knowledge transfer.
3. **Use of Digital Tools:**
   - E-learning platforms, AR/VR simulations, or mobile apps to make training more interactive and scalable.
4. **Performance Reviews and Feedback:**
   - Regular assessments to identify skill gaps and create personalized development plans.
5. **Certifications and Career Progression:**
   - Offer certification paths and clearly defined career ladders to motivate employees.

Benefits of Effective Training and Development

- **Improved Productivity:** Skilled workers perform tasks faster and with fewer errors.
- **Higher Quality Output:** Better understanding of standards leads to fewer defects.
- **Reduced Downtime:** Trained employees can troubleshoot issues and perform basic maintenance.
- **Greater Flexibility:** Multi-skilled workers help maintain production during absences or peak demand.
- **Enhanced Employee Retention:** Development opportunities increase job satisfaction and loyalty.

Training and development are **strategic investments** in shop floor excellence. They not only boost operational performance but also enhance employee engagement and workplace safety. A well-trained workforce is essential for maintaining competitiveness in a rapidly evolving manufacturing environment.

VI Creating a Positive Work Environment

A **positive work environment** is crucial for ensuring employee well-being, boosting productivity, and maintaining high levels of motivation and retention. On the shop floor—where work can be physically demanding and fast-paced—creating the right environment is even more critical.

Nurses' mental and physical health affect how they care for patients. Jenny Sergeant and Colette Laws-Chapman suggest how managers can improve teamwork and raise morale through 'emotional resilience' training (Sergeant & Chapman, 2012)..

Key Elements of a Positive Work Environment

1. Respect and Fair Treatment

- **What it means:** Every employee is treated with dignity, regardless of their role, background, or experience.
- **How to implement:**
    - Promote zero tolerance for discrimination or harassment.
    - Encourage inclusive language and behavior.
    - Ensure fair distribution of tasks and recognition.

2. Clear Communication

- **What it means:** Workers are kept informed and have channels to express concerns or ideas.
- **How to implement:**
    - Conduct daily meetings or briefings.
    - Use visual management tools (signboards, dashboards).
    - Create open-door policies for managers.

3. Safe and Clean Workspaces

- **What it means:** Employees feel physically safe and comfortable in their working environment.
- **How to implement:**
    - Follow health and safety regulations strictly.
    - Maintain cleanliness, lighting, ventilation, and equipment.

- Encourage reporting of unsafe conditions.

4. Recognition and Appreciation

- **What it means:** Employees are acknowledged for their hard work and achievements.
- **How to implement:**
  - Implement employee of the month programs or informal shout-outs.
  - Celebrate milestones like safety records or production goals.
  - Provide verbal or written appreciation regularly.

5. Employee Involvement

- **What it means:** Workers are involved in decisions that affect their jobs and environment.
- **How to implement:**
  - Use suggestion boxes or idea boards.
  - Involve employees in continuous improvement (Kaizen) activities.
  - Include frontline workers in problem-solving teams.

6. Growth and Development Opportunities

- **What it means:** Employees have access to training, upskilling, and career growth.
- **How to implement:**
  - Offer regular technical and soft skill training.
  - Create internal promotion pathways.
  - Provide coaching or mentoring.

7. Work-Life Balance

- **What it means:** Employees can manage their job responsibilities alongside personal commitments.
- **How to implement:**
  - Provide fair scheduling with consideration for personal needs.
  - Offer reasonable breaks and rest periods.

- Avoid excessive overtime unless necessary.

Benefits of a Positive Work Environment

- **Increased Productivity:** Happy employees work more efficiently and with fewer errors.
- **Lower Turnover:** A supportive culture leads to higher employee retention.
- **Better Teamwork:** Respect and communication improve collaboration.
- **Fewer Conflicts:** Transparency and fairness reduce misunderstandings and grievances.
- **Higher Morale:** Positive energy leads to stronger commitment and pride in work.

Creating a positive work environment on the shop floor is not just about comfort—it's about **empowering people** to do their best work safely, respectfully, and collaboratively. By focusing on safety, communication, recognition, and development, organizations can build a culture that drives both employee satisfaction and operational success.

VII Performance Management in the Shop Floor

In the fast changing, highly challenging and competitive business scenario, organizations must focus on not only creating scaling opportunities but also on creating and constantly increasing the performance of their units. It may be increasing sales performance, manufacturing performance or creating highly efficient internal processes, successful companies have long reached the conclusion that in order to reach their organizational objective and goals a performance management is indispensable.

Most successful organizations worldwide use key performance indicators as an important part of their corporate strategy in order to forecast, measure and plan their businesses. Performance metrics vary in their purpose, definition and content. Therefore, the ways organizations select what they think are the optimal indicators for their businesses varies from company to company, sometimes even from department to department.

Fundamentally, a performance system must ensure whether the organization is going in the right path for achieving its goals. Through measuring performance, organizations manage to establish the extent to which activities within a specific process achieve their specified goals. Mainly this happens by calculating the deviation of the actual results and the desired outcome, which is the set goal.

One of the most important components in the shop floor management are the **Key Performance Indicators (KPIs).** The usage of relevant KPIs is crucial to correct area deviations and to drive to improvements. The appearance of the KPIs on the board is very important to have a fast and transparent understanding on the area– “status at a glance.” The KPIs must always show the comparison between the expected and the actual performance and make deviations from the standard immediately transparent, either through “traffic lights” or through another visual system (**Diamantino Torres et al., 2019)**

Effective process management results in an improved shopfloor management **(Flynn et al., 1995)** and directly and positively affects both internal quality (scrap, rework) and external quality (complaints, warranty costs) **(Ahire and Dreyfus, 2000**). The empirical evidence on the positive relationship between process management and quality performance can also be found in other studies (**Forza and Flippini, 1998; Sila and Ebrahimpour, 2005; Nair, 2006; Zu et al., 2008).**

Uninterrupted Shop-floor communication focuses on specialized communicative practices taking place on the shop floor to facilitate the achievement of the quality goal of manufacturing process. Since the shop floor has direct influence on various dimensions of operational performance, such as conformance to design, efficiency, and throughput time. Effective shop-floor communication also includes supervisory interaction facilitation. It indicates that supervisors successfully encourage workers to work as a team, including expressing their constructive opinions and cooperating with each another to improve production. (**Jing Zeng et** al.,2013).

Important KPIs and Metrics at shop floor level to measure performance management

- **Productivity**: Output per worker, machine uptime.
- **Quality**: Defect rates, first-pass yield.
- **Efficiency**: OEE (Overall Equipment Effectiveness), cycle times.
- **Safety**: Incident rates, compliance metrics.

KPIs must have visual impact. It is essential that they are presented in a way to be understood immediately, preventing users from getting lost in excess data or irrelevant KPIs for their job. KPIs must show the problems and the objectives clearly, in such a way that the user understands them without the need to ask any question

It is clear after analysing numerous corporate based researches; creativity can be associated to the involvement of **front-line employees in KPI management**. Through front line employee involvement in the development and management of KPIs sustainability is assured due to the fact that this created acceptance of the selected and used indicators. Moreover, through the involvement of employees in the KPI processes understanding is generated.

Optimizing the workflow on the shop floor involves arranging physical operations and the flow of work in a manner that reduces delays, minimizes waste, and ensures a smooth and continuous production process. By implementing ,**Value Stream Mapping (VSM)-** Analyze and designs the flow of materials and information to identify and eliminate waste, creating a more efficient production process .**Standardized work-** Establishes consistent procedures to ensure quality and reduce errors, making training easier and promoting continuous improvement. Kanban- Uses visual signals to manage workflow, limiting work-in-progress and visualizing the production process to identify and resolve bottlenecks-**Total Productive Maintenance (TPM):** Focuses on proactive maintenance to maximize equipment productivity, reducing downtime and ensuring a smoother workflow.

It is evidenced from studies that there is no better way to improve safety and productivity on the shop floor than having a skilled workforce. **Role-specific training**: Ensure employees receive comprehensive training tailored to their specific roles. This includes understanding the machinery they operate, the processes they follow, and the quality standards they must meet. Safety training: Regular safety training is crucial to minimize accidents and ensure a safe working environment.

Cross-training: Encourage cross-training to increase workforce flexibility. It enables workers to fill in for absent colleagues, adapt to changing production needs, and contribute to different stages of the production process. **Onboarding programs**: Develop structured onboarding programs for new hires to ensure they are quickly integrated into the team and understand their responsibilities. **Feedback and performance evaluation**: Regularly evaluate employee performance and provide constructive feedback. Identify areas where additional training may be needed and recognize employees' achievements.

It is crystal clear that, for delivering quality products and services in the modern-day business, organizations must focus on challenging and customized products and production processes integrated into technological and digital evolution. Thus, shop floor operators have complex tasks with responsibility for their quality control, looking for high productivity levels. Integration of human and technology facilitate an effective performance management in the shop floor. Building multidisciplinary teams at different organization levels; working on continuous improvement strategies; developing the human-cantered and user-friendly perspective; implementing solutions as directly as possible in the workstation; finally, enabling an effective communication and motivation strategies.

VIII Employee Motivation and Retention Strategies

In the modern-day scenario organisations invest heavily on recruiting the skilled personnel, who after a short period move on to another organisation. Employers and managers should have efficient motivation and retention strategies in order to retain these great people.

Employee motivation involves the various factors that drive employees to perform well and stay committed to their roles. Motivated employees are productive, engaged, and contribute to a **positive work culture**, which reduces turnover. In competitive markets, effective motivation strategies, such as career growth opportunities and recognition, are essential to keep employees invested. Employee Motivation and Talent retention is important to organisation competitiveness **(Coetzee & Pauw, 2013**). “Firms that attract, develop, and retain top talent will thrive; those that do not will face significant struggles” (**Holtom, Mitchell, Lee, & Inderrieden, 2005, p. 337).** As the global economy becomes increasingly knowledge-based, the attraction and retention of high-quality employees becomes a competitive advantage. Employee motivation and job satisfaction are the main factors that influence staff retention

(**Jones, Hill, & Henn, 2015; Jost, 2014**). Employees tend to form expectations about whether, and to what extent, their actions contribute to accomplishing their goals.

In turbulent times, the role of the manager becomes more important than ever because managers play a vital and distinct role, different from anyone else in the organization. That role is as a catalyst—someone who can "reach inside each employee and release his or her unique talents and convert them into performance" (**Buckingham and Coffman, 1999**). To effectively motivate and retain employees, a manager needs to deal with each person one at a time—asking questions of, listening to, and working together one-on-one. A "good manager" therefore, is one who will help talented people find satisfaction in their work, and "satisfaction" is key to an employee's decision to stay or leave an organization. **(Buckingham and Coffman, 1999; Kreisman, 2002; Kaye and Jordan Evans, 1999)**.

EMPLOYEE MOTIVATION:

Employee motivation refers to the effort made to achieve organisational goals. (**Robbins and Coulter,1996)** described employee motivation as the willingness of an employee to exert some effort or action in order to achieve the organisational goals, conditioned by the action's ability to satisfy the employee's individual needs. Employee's effort is characterised by the following three components **(Robbins & Coulter, 1996)**:

a. **The direction of efforts**: The employee can choose between different alternatives in order to achieve his or her goals. The direction of efforts relates to that alternative underlying his or her actual work behaviour.

b. **The strength of efforts**: This component determines the degree of commitment with which the employee pursues the chosen alternative. The strength of effort can vary from a low to a high level.

c. **The persistency of efforts**: If the employee's actions involve any obstacles, the question arises as to how much the employee adheres to his or her behaviour. The persistency of efforts reflects his or her attempts to ambitiously adhere to his or her behaviour over a given course of time.

The high cost of recruitment and turnover is just one of many reasons motivated employees are a significant asset to any organization. In addition to being more productive, engaged, and likely to contribute to the organization's success, they are also less likely to leave, with research showing they are 87% less likely to resign. Motivated employees also create a positive work environment that can attract and retain top talent. These motivated employees become advocates for the organization and contribute to a positive workplace culture.

According to Cristescu et al (2013), employees could be intrinsically or extrinsically motivated; the **intrinsic factors** of motivation are relations between the expectations, perceptions and feelings of an individual on the one hand, and the actual content of the individual's work and behaviour on the other hand. Intrinsic factors are- **Job Enrichment**: Provide meaningful, challenging work, **Autonomy**: Allow employees to make decisions in

their roles. **Recognition**: Acknowledge accomplishments publicly and privately. **Growth Opportunities**: Offer training, mentorship, and career advancement,

Extrinsic motivation is also based on individual-organisation relationship and is meant to meet employee's expectations with regard to the organisational reactions in relation to employees' efforts, behaviour and results. **The extrinsic motivation can be achieved by-Competitive Compensation**: Offer fair salaries and performance-based bonuses. **Incentive Programs**: Use rewards like gift cards, trips, or profit-sharing. **Benefits Packages**: Include healthcare, retirement plans, and paid time off. **Workplace Perks**: Provide flexible hours, remote work options, or wellness programs.

Hence, in the modern scenario, the researchers defined employee motivation as the feeling, effort, energy, and driving force an employee uses to achieve individual and/ or organisational goals. The employee will feel motivated to perform if his or her own needs, interests, and goals are achieved through this process, and he/she will therefore direct his/her behaviour accordingly.

EMPLOYEE RETENTION:

Retention is a voluntary move by an organisation to create an environment which engages employees for the long term **(Mengel, 2001; Michael, 2008)**. Hence, organisation employee retention policies focus on identifying and retaining committed employees for as long as this is mutually profitable to the organisation and the employees. Increased job satisfaction could lead to reduced turnover. Retention factors include training and development, supervisor support, career opportunities, job characteristics (which included skill variety, job autonomy, and job challenge), work/life balance, and compensation. This is outlined by **Dockel (2003**). The researchers defined employee retention as the strategy required by an organisation to retain not only talented, but also skilled employees, by understanding the factors associated with employee retention in order to curb unnecessary turnover.

Researchers have highlighted the following reasons for employee turnover in the organisations: hiring practices, managerial style, lack of recognition, lack of competitive compensation system, and toxic workplace environments **(Abassi & Hollman, 2000; Sherman, Alper, & Wolfson, 2006).**

According to Jeswani and Souren (2008), employees' engagement is necessary in their retention as disengaged employee disturbs the system and can multiply dissatisfaction level resulting to decreased motivation, diminished performance and high employee turnover. The factors affecting an employee's decision to stay or leave an organisation depends primarily on organisational culture, probably because of the fact that job satisfaction and performance level

are influenced by working conditions. Therefore, **performance level and job satisfaction depend on working conditions.**

Establishing proper communication between managers and subordinates is paramount to retention. Benefits and pay may be additional incentives or ways but not main reasons for employees' retention. For instance, communication, employee absenteeism, and productivity were found to go concurrently and poor communication is one of the main reasons for employee turnover.

Leadership is another key factor to employee retention (**Matibiri & Nienaber, 2011**). Leadership plays an important role in the needs of employees, manager-leader must communicate with employees regarding their needs; likes and dislikes. As soon as employees think that their values are incompatible with those of their organisations, they are prepared to leave. Furthermore, ongoing leadership skill development from the Top bottom is very crucial, since people do not leave their jobs but leave their leaders). Paying above the labour market,) helps retain good people, which 'retention of key talent and the role of rewards' employee development.

Flexible Scheduling and Reduced Workdays-Along with offering remote work, studies from the Society for Human Resource Management also show businesses offering more flexible work options maintain significantly better worker retention. Even before the pandemic made work-from-home a norm, a 2019 study showed nearly two-thirds of workers found themselves more productive outside of a traditional office due to fewer interruptions, fewer distractions and less commuting. Creativity can't always be turned on like a faucet, so offering your employees flexible hours encourages them to find the times they will be most efficient and productive to focus attention on the work.

Create a Culture That Employees Want To Be Part Of-Another key retention strategy is creating a work culture that your employees want to be part of. **(Glassdoor study,2019)** found that a company's culture matters significantly not only to employees who are considering a job (77% said they would consider a company's culture), but also to employees staying in their jobs. In fact, nearly two-thirds of employees cited a good company culture as one of the main reasons they elect not to leave.

Minimise Employee Burnout-A 2020 Gallup report, **Employee Burnout: Causes and Cures**, found that 76% of employees sometimes experience burnout on the job and 28% stating they feel burnout "often" or "always." While it is often assumed burnout is caused by overwork and can be solved by taking days off or reducing work hours, Gallup's study found burnout is actually more influenced by how employees experience their workload than the literal number of hours they work. Employees who feel more engaged by their work, who are properly recognized and rewarded and who are offered better job flexibility via reduced hours, remote work or flexible scheduling actually report higher well-being.

Address Burnout and Mental Health-Research indicates that up to 44% of employees experience burnout (SHRM research,2024). Burned-out employees are 63% more likely to take a sick day and 2.6 times as likely to be actively seeking a different job. Addressing it should be a top priority for organizations. Managers should regularly review deadlines to

ensure they are realistic and attainable and conduct one-on-one check-ins to assess whether employees are feeling overloaded. Make it easy for employees to take leaves and short breaks throughout the day. Implement flexible start and end times to give employees more control over their schedules.

It is important to note that in difficult economic times such as now retention may be higher because it is difficult or hard to find other work. In recent times, organisations are afflicted with talent shortage issues, and administrators and managers have realised the competitive advantage in having competent staff. Furthermore, efficient and productive workforce make organisations to survive, and flourishing is consequential to rapidly increasing focus on retaining key talent or valued employees. Corporates keeping skilled employees by providing adequate motivation is crucial because of the time and money it takes to replace them. The high rate of turnover is of serious concern. Increased attrition level adversely affects the overall performance of any organisation, and needs to be monitored and managed carefully. From a retention perspective, employees that are strategic to the mission and difficult to replace should be the focus of most businesses, much effort should be made to retain them.

IX. The Impact of Technology on Shop Floor Management

In the digital era Industry 4.0, challenges for shop floor management are the lack of timely, accurate and consistent information. There is hardly any chances of implementation and follow-up of daily shop floor meetings. For example, employees spend 57 % of their time collecting and processing data in preparation for shop floor rounds. Today, technology not only plays an essential role in traditional shop floor management, but it is also becoming even more important in Industry 4.0, particularly due to the increasing possibilities offered by new digital and data technologies and developments. **(Janika Kutz et all.,2025**) describes in their article, Industry 4.0 and the accompanying digital transformation of the modern-day factory have led to various advances in manufacturing. Shop floor management (SFM) – a core instrument of production management – has to align with these digital advances as well. However, due to SFM's strong human-centric roots and manufacturers predominantly conducting SFM through analog means, it raises the question of what sort of digital support should be used for SFM and what specifications should be included in digital SFM systems. The digitalization of those processes adds the possibility of automatic data generation and can therefore save time on the shop floor. A study showed that only 17.5 % of the companies surveyed use a digital shop floor management (DSFM) system According to another study, fully automated processing of machine data is only available to five percent of the companies surveyed (**Alyssa Meibner et all.,2020).** Corporates use Shop Floor Management to be able to track Key Performance Indicators (KPIs), start problem solving processes and to improve their production processes. An improved Shop Floor Management through digitalization can help production companies to remain competitively viable. It is observed that the quicker responses to deviations and assisted problem-solving processes can address today's challenge of increasing flexibility and complexity in production systems. Therefore, a digital shop floor management (DSFM) system

entails less paper-based information and allows employees to have production data digitally available faster and for a larger group of people. A key use case for data-oriented decision-making is the calculation of KPIs or general shopfloor monitoring and performance management. These can be used to create data transparency, monitor production and provide a basis for decision-making when taking action. In a data-related context, the most automatic and accurate collection and the best possible accessibility (e.g. remote or real-time) represent significant advantages in terms of efficiency and effectiveness.

To accomplish improved productivity within limited constraints by sustainable production planning models, several approaches are used which include lean manufacturing, kaizen, smart manufacturing, flexible manufacturing systems, cyber–physical systems, artificial intelligence, and the industrial Internet of Things in the present scenario. These approaches are used for operations management in industries, and specifically productivity maximization with cleaner shop floor environmental management, and issues such as worker safety and product quality **(Varun Tripathi et all.,2022).**

TECHNOLOGY AND SHOPFLOOR MANAGEMENT

In the 21st century, technological impact on shop floor management is profound, with real-time data collection and analysis, IoT, and machine learning enabling predictive maintenance and operational optimization, despite challenges balancing productivity and quality. The present challenging corporate world, technology has exerted a deep influence on shop floor management. Real-time communication modes and digital workplace platforms facilitate efficient data exchange between management and frontline workers, enhancing shop floor management. Automated data capture through digital technologies enables operators to focus more on production activities rather than on manual documentation. Advanced shop floor management and control software are instrumental in implementing digitalization on the shop floor. Transitioning from paper-based systems to digital devices results in efficient data management, real-time visibility, and an overall increase in operational efficiency is the need of an hour.

Shop Floor Control Software- play a critical role in monitoring and reporting work processes in real-time, ensuring efficient scheduling and tracking of operations. The core tenets of a shop floor control system are data collection, analysis, and real-time monitoring.

Combining MES with ERP Systems for Enhanced Productivity-Integrating Manufacturing Execution Systems (MES) with Enterprise Resource Planning (ERP) systems or a WMS result in a seamless flow of information, aligning production processes with strategic business goals. This integration facilitates real-time data exchange, ensuring that production activities are synchronized with overall business objectives.

Advanced Process Control applications play a crucial role in reducing variability in manufacturing processes, enhancing both product quality and production efficiency. By providing precise control over production parameters, APC applications ensure consistent output, meeting quality standards while optimizing resource usage.

In addition to that to balance quality and productivity, **dynamic task assignment and job card digitization can be implemented**. These tools streamline supervisory tasks, allowing managers to allocate resources and monitor operations more efficiently. This not only saves time but also improves overall shop floor management, leading to enhanced operational performance.

Real-Time Data Collection and Analysis-

The collection and analysis of real-time data proves to be a game-changer in enhancing production processes and implementing quality standards. MES systems are pivotal in closing the information gap between plant floor production and higher-level enterprise resource planning, by offering real-time manufacturing insights.

(Zhong RY, Xu C 2015) describe such an approach in the context of production planning and scheduling on the shopfloor, using automatic identification (auto-ID) devices to collect real-time data from manufacturing resources. Auto-ID (i.e. RFID) is a possible and important technology for the smartification of logistics objects in this context. For example, material-related logistics data on the shopfloor can be used to monitor and optimise bottlenecks in shopfloor logistics, performance deviations, material stock/work in progress (WIP) levels or on-time delivery of shopfloor logistic Accessing real-time, accurate data through MES is essential for production optimization, enforcing quality standards, and complying with regulatory requirements.

IIoT-enabled devices-Cutting-edge technologies such as the **Industrial Internet of Things** (IIoT) and **machine learning** are transforming shop floor management. Digital transformation in shop floor management incorporates these advanced technologies to optimize operations and safety. It facilitates instantaneous data collection from the shop floor, enabling swift data analysis and real-time information visualization through dashboards. Automated data collection systems can interface with various types of machinery, both modern and legacy, via sensors, to ensure a comprehensive data collection from the shop floor. Without real-time data monitoring mechanisms, measuring labour efficiency and overall equipment effectiveness becomes a significant challenge in managing the shop floor. Implementing technological solutions like real-time sensors, together with MES, improves quality control by monitoring production processes and signalling abnormalities instantaneously.

ASC Software-offers tailored solutions to help manufacturers achieve peak productivity, maintain quality, and ensure safety. With over 3 decades of industry-leading experience, our comprehensive software addresses the complex demands of warehouse, distribution, manufacturing, and 3rd Party Logistics(3PL) operations. The software facilitates-**Warehouse Management-**Streamline inventory and order processing to boost efficiency and reduce errors, ensuring timely delivery and optimal stock levels. **Manufacturing Execution-**Gain real-time control over production processes, from scheduling to shop floor tracking, enhancing efficiency, quality, and compliance with industry standards. **Warehouse Control System-**Automate and manage warehouse operations, from receiving to yard management, improving workflow, reducing downtime, and maximizing productivity. ASC software impacting the industry in terms of –

Lean Principles Expertise-the solutions are grounded in lean manufacturing principles, designed to eliminate waste and enhance efficiency, helping you achieve higher output with lower costs.

Continuous Improvement Commitment- We provide your workforce with advanced tools and comprehensive training to drive ongoing process improvements and foster a culture of excellence.

Digital Transformation Leadership: Embrace the power of real-time data visibility and predictive maintenance with our cutting-edge technologies, ensuring your operations are always optimized and future-ready.

Machine Learning-ML as a subset of AI is particularly interesting for Shop Floor Management (SFM) in the context of data, as ML can adaptively gain experience and knowledge from collected data. For example, it can identify characteristics and relationships between variables, build complex statistical models, perform fault diagnosis and predictions, and enable predictive or prescriptive decision-making on the shop floor. There are many ML algorithms that can be used for shopfloor management, such as regression, decision trees, support vector machines and neural networks in various forms. In addition to use cases that focus on information flow, combined ML applications are also conceivable that relate to material flow and indirectly contribute to information-based applications.

Maintenance in the context of Shop Floor Management (SFM) is discussed not only from a maintenance cost perspective, but also because machine failures can lead to unplanned supply bottlenecks in subsequent processes or customer deliveries. There are already several approaches in the literature on how to perform preventive maintenance based on real-time monitoring. (**Mourtzis et al. 2016)** present a cloud-based approach for condition-based preventive maintenance (CBPM), which uses sensor data from the machine and input from the machine tool operator (i.e. busy, available, down) to report condition information in near real-time on mobile devices without the need to be physically present on the shopfloor.

The digitization of SFM is becoming increasingly relevant. it is clear that effective shop floor management is multi-faceted, encompassing everything from lean principles and visual management systems to digital technologies and employee empowerment. It's a delicate balancing act, ensuring quality and productivity while managing change and fostering a culture of continuous improvement. Embracing these principles will not only optimize your shop floor operations but also contribute to your business's overall success. The fact is, the shop floor is the heart of the corporate manufacturing process and is the key to a healthy, thriving business. **(Janika Kutz et all.,2025**) in their concluding remarks, The current practice of SFM in many companies is faced with numerous challenges. One potential solution to overcome these challenges is through the sophistic technological transformation of SFM. However, it is crucial to ensure that employees remain at the centre of SFM for this transformation to be successful. To effectively combine human centricity and technology in SFM and unlock its full potential of digital solutions, it is recommending a Smart SFM approach

X Case Studies of Successful Shop Floor Management

In the modern technical and volatile business environment, entities must think about effective and quality-oriented Shopfloor Management (SFM), as it has an impact on daily routines of all organizational levels. The SFM methodology was selected as a solution concept because it seemed to address many aspects of the problem statement and at the same time was consistent with the company's overall goals of implementing Lean. SFM would replace traditional ways of communication and reporting with a short-cyclic, dialogue- and metric-oriented, standardized management routine which was claimed to be very efficient by strongly increasing the relevance of and reducing time spent on communication on all levels of the organization simultaneously (**Bertagnolli, 2018**). This effect has been recently also confirmed by research (**Wester & Hitka, 2022**), based on an SFM implementation in a company in Germany (steel industry). SFM conceptually is an addition to the Last-Planner-System by providing a daily routine with multiple topics relevant to short term production management (e.g. materials required, staff on site). It was intended that communication otherwise happening during the day and leading to interruptions would be combined in the daily stand-up, creating an efficiency gain and leading to smoother communication patterns.

CASES OF EFFECTIVE SHOPFLOOR MANAGEMENT ENHANCED COMPANY'S EFFICIENCY AND PRODUCTIVITY

TOYOTA – LEAN MANUFACTURING & KAIZEN-

Toyota is widely regarded as the pioneer of effective shop floor management through its Toyota Production System (TPS). In the realm of operational excellence, Toyota Motor Corporation stands out as a paragon of efficiency and innovation. The Toyota Production System (TPS), a unique blend of Lean Manufacturing and Kaizen principles, has revolutionized the automotive industry by significantly reducing operational costs while maintaining high standards of quality and productivity.

Toyota Implemented **Just-in-Time (JIT) and Jidoka** (automation with a human touch). **Regular Kaizen** (continuous improvement) meetings at the shop floor. **Standardized work and visual management** (e.g., kanban boards).Toyota's implementation of TPS has led to numerous success stories that highlight the system's effectiveness in reducing operational costs and enhancing efficiency:

Reducing Inventory Costs: By adopting JIT, Toyota minimizes inventory holding costs. For example, the Kanban system ensures that parts are only produced and delivered as needed, significantly reducing excess inventory. This approach has allowed Toyota to reduce inventory carrying costs by up to 50%, freeing up capital and reducing waste.

Enhancing Product Quality: The principle of Jidoka ensures that defects are detected and addressed immediately. This has led to a dramatic decrease in rework and warranty claims. For instance, Toyota's commitment to quality has resulted in a defect rate of less than 10 parts per million (ppm), compared to industry averages of 50-100 ppm, leading to substantial cost savings.

Increasing Production Efficiency: Standardized work processes and continuous improvement initiatives have significantly boosted Toyota's production efficiency. A notable example is the introduction of Andon cords in their factories, allowing workers to halt production if an issue arises. This has led to a 20% increase in productivity by ensuring that problems are resolved promptly and do not recur.

Higher quality and employee ownership- Toyota values its employees and promotes a collaborative work environment. Empowering workers to take ownership of their tasks leads to higher morale and better performance. Toyota fosters a culture of continuous improvement, where employees at all levels are encouraged to suggest and implement incremental changes to enhance processes.

TATA MOTORS – LEAN MANUFACTURING IMPLEMENTATION

Tata Motors, a leader in the automotive industry, exemplifies how lean principles can transform inventory practices, ensuring minimal waste and maximum productivity. Tata Motors' inventory management strategies and their broader implications for businesses adopting lean methodologies. The Key areas where Tata Motors inventory management focused are- Reducing inventory carrying costs. Maintaining adequate raw material stocks during supply shortages. Avoiding overstocking or understocking to ensure production continuity and supporting long-term planning with accurate inventory data.

KANBAN: Visualizing and Controlling Inventory Flow- is a signalling tool integral to lean inventory systems, helps Tata Motors manage inventory within production.

Tata Motors leverages the **EOQ model** to calculate the optimal order quantity for minimizing the combined costs of ordering and holding inventory. While the model requires stable demand and consistent lead times, it helps maintain inventory levels at an economically optimal point. Daily **shop floor meetings** for performance monitoring resulting in 20–30% reduction in lead time. Enhanced product quality and reduced rework. Improved employee participation and morale at Tata Motors.

While tools like ABC analysis, KANBAN, and JIT have proven effective, Tata Motors continuously adapts these methods to overcome challenges such as fluctuating demand, variable lead times, and supplier inconsistencies. By fostering a culture of flexibility and continuous improvement, the company ensures its inventory practices remain aligned with its operational goals.

GENERAL ELECTRIC (GE) – SIX SIGMA

General Electric is a successful company administering Six Sigma, it has estimated benefits on the order of ten billion dollars during the first few years of administration. Companies around the world have long discovered the benefits of Six Sigma. As a methodology, that follows an orderly approach with the aim to achieve perfection, it's no surprise Six Sigma has proven to be successful in corporate restructuring, organization, and process improvement. GE adopted Six Sigma to reduce defects and improve process capability. GE applied DMAIC (Define,

Measure, Analyze, Improve, Control) at the production level. Trained shop floor operators as Green Belts and Black Belts., Installed real-time dashboards for performance monitoring.

General Electric required almost all employees to take fourteen days, 100 hours of Six Sigma Training Program after which a project administering methodologies was requested. Mentoring played a vital role in General Electric's excellence. Employees whose jobs were inherent were mentored and trained by the master black belt experts. Jack Welch's asked for a commitment to their Six Sigma goals from both executives and the General Electric workforce, ensuring bonuses and promotion to improvement in quality. A Green Belt certification became a minimum requirement for promotion at General Electric and bonuses depended on the excellence in administering a Six Sigma project. The company is successful in -Defect rates dropped by over 50%. Millions saved through process efficiency and waste reduction.

BOSCH – INDUSTRY 4.0 INTEGRATION

Bosch implemented smart manufacturing principles at its Homburg plant in Germany.

Use of IoT-enabled sensors on machines for predictive maintenance. Real-time data analytics and digital work instructions on tablets. Collaborative robots (cobots) working alongside operators.

Bosch Production line is made up of three automatic and two manual modules by which Bosch Rexroth's machine controls are assembled. By means **of Radio Frequency Identification Chips (RFID Chips),** the scanner in the automatic modules always knows which control has to be produced. RFID is the term used for the technology to automatically identify and locate objects using radio waves. In return Increased uptime by 25%. Enhanced product traceability and decision-making on the floor.

TATA STEEL – EMPLOYEE ENGAGEMENT AND VISUAL MANAGEMENT

With an objective to make the shopfloor safe and vibrant, Tata Steel launched the '5S & Visual Workplace Management Assessments' under the aegis of 'Apex Safety Management System & Audit Safety Subcommittee', across all its locations. 5S refers to five Japanese terms used to describe the steps of the 5S system of visual management.The 5S stands for **Sort, Set in Order, Shine, Standardise and Sustain**.

Tata Steel focused on empowering shop floor workers to drive improvements. Company has used visual performance boards and regular Gemba walks by leadership. Created suggestion schemes and reward systems for workers. Deployed 5S methodology for workplace organization. This move resulted in Thousands of employee-driven improvement ideas implemented. And Improved safety, morale, and operational KPIs.

ASHOK LEYLAND – SHOP FLOOR SKILL DEVELOPMENT

Established Ashok Leyland Institute of Driving Training and Research (ALIDTR). Conducted structured skill development and safety training programs. Company Focused on employee-led improvements and teamwork. Company's efforts resulted in Better quality control and Increased accountability and innovation from the floor team.

TVS MOTOR COMPANY – TPM EXCELLENCE

TVS Motor rated as the benchmark in TPM excellence in India. TVS Motor Company was awarded the coveted Total Productive Maintenance (TPM) Excellence Award - First Category by the Japan Institute of Plant Maintenance (JIPM) - Japan, a Unit of Japan Management Association (JMA). In a brief ceremony held today in Tokyo, Japan, company has implemented Total Productive Maintenance (TPM). Established autonomous maintenance by operators. Frequent Kaizen activities and focused improvement teams. By implementing TPM processes in its plants, TVS Motor Company has achieved significant results in quality and cost-effective manufacturing. Zero accident has been achieved in both plants and productivity has improved by 35%. It is observed that 60% drop in machine-related downtime. And Strong shop floor discipline and ownership.

There are many corporations who have implemented Shop Floor Management (SFM)and succeeded in it. Of course, every company is different, and problems with SFM implementation can vary. Companies seeking to embrace SFM should be aware that its successful implementation will strongly depend on the readiness to create teams that are more autonomous than in traditional hierarchical and functional setups, and that the teams are motivated to not only solve issues in the individual project but also to identify root causes of issues in the sense of company level continuous improvement and learning. It is clear that every company and its operational modes are different. Suitable methods of research have to be done with the aim to show the most typical key moments in the process of SFM planning and implementation.

XI Directions for Further Research

There is a need for further research on effective shopfloor management. There are several success factors are dependent on KPIs to measure, control and improve resource efficiency of production processes. This requires new KPIs for climate neutral production which have played a subordinate role in classic SFM to date and have not yet been described in detail in this context. A major obstacle here is the delimitation of the resource consumption caused by each individual workstation because of the difficulty or cooling to several machines. The competences of employees and management in climate neutral production that need to be improved. To be able to use SFM for the transformation a full description of relevant competences for shop floor personnel as well as management is needed.

There is a need for future research in the shop floor management, it is necessary to investigate on various types of industries and relevant shopfloor management techniques to be implemented for better productivity. is limited to companies that already have well-established SFM practices in place.

Future research should be based on geographic regions, adopt longitudinal approaches for deeper insights, and explore additional factors that may influence the effectiveness of Shop Floor Management. By addressing these areas, researchers can more effectively leverage SFMS to enhance operational efficiency, productivity, and product quality.

The further research is needed to be done on reinforcing the strategic importance of investment, employee engagement, and management support in achieving superior performance outcomes.

There is a need to examine recent technological tools because Digitalization adds more technological aspects to SFM. Investigation is needed to be d one on the role of communication in influencing quality efforts to achieve process quality at the shop-floor level during production process, future studies are expected to examine the role of communication in influencing other quality process such as design quality during design process. There needs an examination of the potential effects of contingency factors (e.g. country effect, firm size) on the hypothesized relationship could also provide a fruitful field of research endeavor. Further work has to be done on Identifying the type of relationship among communication, process management and quality performance whether it is mediating effect or moderating effect– would be also an interesting research topic

The automotive market involves fast change, which is necessary to transform a conventional production system into an Industry 4.0 and the main changes made in the shop floor in the areas of creation of multidisciplinary project teams with their associated indicators (KPI) to co-develop products with the customer; The creation of a digital factory, The creation of the "integrated management systems" department to simplify the organization and facilitate its digitization, The implementation of the "logistics" function to respond to the international market and to extend the processes to include the customer, The training of employees and permanent training team for the directly productive operators.

There is intense need further research on companies to understand their current SFM system. Knowing their starting point makes it easier to identify which changes have to be made or processes or programs have to be implemented to reach the mentioned target state.

XII Conclusion

Shop Floor Management (SFM) is a organised leadership approach where managers are regularly and structurally present at the place of value creation. It is a systematic approach which combines effective leadership with continuous process optimization and enables immediate response to production challenges. Needless to say, that in 21st Century, the corporations need intact shopfloor management where managers and production employees meet daily at this place of value creation to carefully analyze the equipment, inventory, storage, and manufacturing processes in order to identify any disturbances or deviations in the value-added processes — and to initiate countermeasures where necessary. communication affects the implementation of three process management practices i.e. process control, preventive maintenance, and housekeeping. There is an intense requirement for quality performance in terms of conformance quality at a shop-floor level. Studies demonstrates the positive effect of all above four types of shop-floor communication on the implementation of all three process management practices, while three among these four types (small group problem solving, feedback, and instructive communication) have positive effect on the resulting quality performance at the shop floor.

The right shop floor management allows for the smooth and swift flow of information, with real-time communication achievable by utilizing IIoT solutions. Companies with adequate shopfloor management can manage the production cycles start running smoothly, experience a decline in wastage and overhead — and, consequently, an uptick in profitability. The successful Shop Floor Management requires a structured approach and the right combination of people, methods, and tools. It is noted that the automated access to key supply chain data in real-time through well management shop floor management dashboard, can make data-backed decisions in record times. As a result, managers can save valuable time and use it to focus on other core activities. This naturally leads to a boost in other areas on top of the optimized shop floor management.

The research projects that an effective Shop Floor Management plays a central role in increasing efficiency and quality. Companies that successfully implement SFM achieve on average-20-30% higher productivity,15-25% fewer quality defects,40-60% shorter response times to problems and significantly higher employee satisfaction. Shop Floor Management continues to evolve while remaining an indispensable tool for manufacturing companies. Success lies in balancing proven methods with innovative digital solutions. Companies that find this balance create the best conditions for successful and sustainable production optimization. An effective shop floor management is a bridge between employer and employee synchronisation towards attaining quality at workplace and achieving organisational targets with the touch of sheer quality and ensure the overall growth of employees and company.

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