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ABOUT US

World Confederation of Productivity Science (WCPS) was founded in 1969 as an apex professional body for promotion and development of Productivity Science across the Globe.WCPS brings together individuals and organisations who share common aims and objectives of Social, Economic and Environment (SEE) Productivity. WCPS regularly organizes World Productivity Congress (WPC) in member countries to deliberate on Topical Productivity Challenges. WCPS also organizes relatively smaller customized Regional Conferences and Seminars for the benefit of Regional participation.

WCPS has two Divisions, World Academy of Productivity Science (WAPS) and World Network of Productivity Organizations (WNPO).

World Academy of Productivity Science is the Academic Division of WCPS engaged in Research, Education, Capacity Building and Knowledge Management. WAPS honors Experts, Academicians, Researchers and Productivity Professionals by inducting them as Fellows of WAPS.

World Network of Productivity Organizations is the Network of Organizations across the Globe engaged in promotion and development of Productivity Science. WNPO organizes events and Training programs with support of member organizations.

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Message from President, WAPS

Welcome 2025! An exciting year is ahead of us

At the start of this new year, I am pleased to share that WAPS and WCPS India are collaborating to bring forward a global Summi in Delhi, India, during August "20-21", "2025". This Global Summit will offer our Fellows and Members an opportunity to meet in person, catch up with old friends, and meet new colleagues. A Flyer with details of theme and sub themes of the Summit is part of this issue of IJPS. Readers are invited to submit papers for presentation during the event.

Updated Definition of Productivity Science

The concept of productivity science is essential for understanding how individuals and organizations can achieve more with the same resources. However, the traditional definition of productivity as a measure of efficiency may not fully capture the complexities of modern work and life. With the advent of technology, the way we work and measure productivity has evolved, leading to a need for an updated definition that aligns with current practices and goals.

Contributions from our Fellows enabled WAPS to develop an updated definition of Productivity Science:

Productivity Science is a multi-disciplinary science focused on the systematic organization and transformation of knowledge and financial, physical, and natural assets to improve social, environmental and economic outcomes. Productivity Science embraces methodologies that achieve the greatest societal benefit in relation to the resources invested.

WAPS Knowledge-sharing Forum

The 8th and 9th Knowledge-sharing Forum events were successfully held via Zoom on September 12 and December 5, 2024, respectively, covering topics on "AI and Productivity" and "Diversity and Productivity."

Entering into the fourth year of the Knowledge-sharing Forum, we will host our first double-digit event, the 10th KSF, on March 20 with a theme "Adapting to Technological Change: Preparing the Workforce for Future Productivity Challenges."

Join the event and share your perspectives.

Welcome 2024 Fellows

A virtual induction ceremony awarding 11 outstanding productivity champions was held via Zoom on December 18, 2024. They are Mr. Deodass Appalswamy (Mauritius), Prof. S.G. Deshmukh (India), Prof. K. Gopalakrishnan (India), Mr. Philip Green (Canada), Mr. Lu Jinshu (China), Mrs. Amelia Naidoo (South Africa), Prof. Zoe Radnor (U.K.), Prof. Ravi Shankar (India), Mr. BV Sudharshan (India), Mr. Rajesh Varma (France), and Dr. Shalini Urs (India).

Recording of the induction ceremony can be accessed via WAPS YouTube channel:
https://www.youtube.com/watch?v=o3OWA_Nntc0. *Please Like-Follow-Share the WAPS YouTube channel.

Call for Fellow Nomination 2025

Call for 2025 Fellow nominations has just started. As Fellows, you have the privilege to nominate outstanding productivity professionals to the Academy so we may induct them into our elite network of Fellows.
Deadline for nomination is April 30.

Educating the Public about Productivity

To raise public awareness of productivity, WAPS has published "A Collection of Short Essays on Productivity in Practice" Volume I. These short essays are contributed by Fellows of WAPS which represent their perspectives on

productivity. It provides a forum for our Fellows to share their experiences with individuals from all walks of life.

Volume I consists of 10 short essays contributed by Fellows from Canada, China, Finland, India, Nigeria, Singapore, Turkey, and the United States. This Volume is published on the WAPS website as well as on medium.com, https://medium.com/@secretariat_47636.

Do plan on contributing to Volume II.

Going Forward

I urge you to become more active at the Academy, to participate and bring your expertise to WAPS events, to initiate programs and/or join our task groups to bring productivity, productivity science, and WAPS to the global center stage.

Subscribe to the WAPS social-media channels:

LinkedIn: https://www.linkedin.com/company/96334213
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As always, please stay in touch _ the executive team looks forward to hearing from you and meeting you in person soon. We wish you a great 2025!

Sincerely yours

Chen Shengchang

President, WAPS

Productivity, sustainability and leadership for the benefit of humankind

Prof Barnes Sookdeo
University of South Africa

Abstract

This essay unpacks the concepts of productivity, sustainability, leadership and motivation which can be used as strategies to benefit organizations. In the volatile of the competitive manufacturing landscape, these strategies are critical to organizational sustainability. This essay also identified the necessity for productivity, sustainability, leadership and motivation as strategies to benefit organizations. The essay provides strategic insights and practical thinking to encourage organizational management to look at productivity enhancement interventions to ensure the sustainability of organizations.

Keywords

Productivity, sustainability, motivation, competitiveness

Introduction

The world post COVID-19 continues to suffer the aftershocks of the pandemic disruptions that have revolutionized how businesses operate worldwide. This global shift, resultant from health and economic crises forced businesses to evolve or perish. However, the pandemic has also interestingly augmented the 4IR adoption process by businesses. Businesses anticipate that adopting the 4IR can deliver superior results, such as decline in labor costs and increase in productivity and can lead to better resilience. Nevertheless, businesses markets are not invulnerable to volatility, uncertainty, complexity, and ambiguity brought about by the disruptive ability of the 4IR. Henceforth, productivity and sustainability in the 4IR has become a research topic of interest to many researchers. It is essential to elaborate on the necessity for productivity measurement and enhancement for the subsequent sustainability of organizations.

According to Lings (2014), there is apparently a very high rate of business failure among small to medium enterprises (SMMEs), in South Africa. Within the South African context, estimates indicate that 40% of all new businesses fail in their first year of existence, as much as 60% in the second year and an exceedingly high 90% within the first 10 years from inception. The 2012 Global Entrepreneurship Monitor (GEM) report supports these statistics regarding the poor survival rate and confirm that the survival rate for SMMEs in South Africa is low in comparison to global standards, (Bushe, 2019). This trend cannot be allowed to continue as the non-sustainability of organizations and subsequent job losses impact an economy. So, what are the repercussions of job losses for employees? It has been stated that for every one job loss, an average of four individuals in a household go hungry. The industrial and business environments are continually changing and seeking efficient methods of working. This can be credited to several factors, namely, competitiveness, the Fourth Industrial Revolution (4IR), globalization and the latest technological advancements in organizational processes. It is common knowledge that organizations can grow and increase their profitability by enhancing their productivity, thereby ensuring their sustainability.

Unpacking productivity

Productivity improvement entails measures output per unit of input, such as labor, capital, or any other resource (Kenton, 2018). Singh (2018) very aptly defines productivity as the transformation of available materials and workforce resources into essential goods and services within an organisation. According to (Mohammed et al., 2013) shows that human capacity development involves both organizations and individuals as an investment process that allows them to realize their full potential for increased productivity. This speaks very eloquently our topic which alludes to productivity and sustainability. Working smarter and working fewer hours may have a positive impact on productivity. However, working longer hours does not necessarily result in increased productivity. Less fatigue occurs among workers or if employees work harder during the shorter number of active hours. Organizations must attempt to

reduce the consumption of resources, thereby reducing cost per unit output through utilization of proper methods, ultimately ensuring their sustainability.

The United States (US) has long enjoyed the world's highest productivity. Over the last one hundred years, productivity in the US has increased approximately four percent per year. In the past two decades, the US rate of productivity improvement has been exceeded by that of China, at 13.4%. Unfortunately, South Africa (SA) is far behind their first-world counterparts. In 2017, SA's economic performance was ranked 58th out of sixty-three countries. This requires urgent management interventions to ensure that productivity is improved in individual organizations which, in turn, automatically improves the overall productivity of a country, again, ensuring their sustainability. It is incumbent on organizations to improve their productivity, which also contributes to competitiveness and their sustainability. Increasing employee productivity should be on the forefront of any managerial mind.

Towards sustainability

An organization's processes may be sustainable and continue to operate, but their work processes might not be productive. Will this eventually lead to the organisation not being sustainable? The major challenge whcih organizations face with manufacturing is the tendency for many managers to merely evaluate manufacturing primarily based on cost and efficiency. Seminal works by Drucker, who is widely regarded in the West as the father of the management discipline, held the view that "it is important for managers to ask the right questions rather than to get the right answers for the wrong questions". However, Cohen (2018) cautions about asking questions, as Drucker wrote that "asking the wrong question, even if you get the right answer to that question, can be worse than not asking any question at all".

For a performance measure to mean something, it must be compared to some kind of target. One of the main weaknesses of current performance management systems used by organizations is that efficiency reporting systems contain standards which are unrealistic and unachievable. To compete effectively in the marketplace, it is incumbent on organizations to outdo their competitors with superior operations. Despite these challenges, few organizations have systematic processes in place to ensure that their performance management systems continue to reflect their environment and strategies.

This places organizations under tremendous pressure to reduce their costs, increase the quality of service and provide goods of superior quality to challenge their competitors. To meet these goals and remain more competitive and sustainable, organizations embark on the use of many different strategies to make their production processes efficient and provide an output that meets customer satisfaction. In addition, organizations should always be searching for ways to optimize business processes so that they can reduce manufacturing costs. Setting standard times for operations are not just a major challenge for today's performance improvement personnel, it is critical.

Leadership and motivation regarding productivity

The productivity and sustainability of an organization is closely related to effective leadership, and motivation. Productive and sustainable organizations usually have leaders who can lead, provide clear direction, and motivate team members. Motivation is also a key factor to enhance productivity and sustainability. Motivated employees work harder and produce better results. Motivation can come from rewards, challenges, and opportunities to grow and develop. Productive and sustainable organizations usually have leaders who can lead the team, provide clear direction, and show confidence in team members. Motivation is also a key factor when it comes to productivity and organizational sustainability. Motivated employees work harder and produce better results. Work motivation can be enhanced by encouraging employees with remuneration, who feel supported and have a place in the organization and leads to higher performance. Intrinsic motivation pushes employees to help them achieve the goals or tasks set. When a person is highly motivated, he/she will do his/her job to the fullest. If a person demotivated, they cannot innovate to achieve the goals of the organisation. This motivation is required because each individual employee is expected to work effectively and full

of enthusiasm to achieve high work productivity.

Conclusion

Organizations in South Africa are affected annually by labor unrest with employees in constant demand for increased remuneration. "Strike season" seems to have become a norm on the South African calendar year. The author is of the opinion that an increase in remuneration must be combined with a simultaneous increase in productivity to allow for a "win-win" situation between the employer and employee. Productivity and sustainability are crucial to economic growth as the spinoff is that these strategies benefit organizations by assisting to raise the living standards of people. It is common knowledge that enhancing productivity subsequently results in higher output, reduced costs, improved employee morale, better customer service, and increased overall profitability. It also positions organizations for sustained growth. Productivity and sustainability are key to an organization's profitability and long-term success. It measures how much output an organization can produce from resources such as labor, capital, or raw materials. If an organization improves its productivity, it can generate more output from its resources, and subsequently enhancing its sustainability.

References

Bushe, B., 2019. 'The causes and impact of business failure among small to micro and medium enterprises in South Africa.' Africa's Public Service Delivery and Performance Review 7(1), a210. https://doi.org/10.4102/apsdpr.v7i1.210

Cohen, C. 2018. Follow Drucker's Lead: Ask the Right Questions. Lessons from Drucker. Management Matters Network.

Drucker, P., 1985, Innovation and entrepreneurship. William Heinemann, London.

Lings, K., 2014. The missing piece: Solving South Africa's economic puzzle. Pan McMillan. South Africa, Johannesburg.

Is the world ready to embrace a cashless economy?

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Abstract
This paper examines the evolution and implications of the transition towards a cashless economy, highlighting the technological advancements that enable digital transactions and the varying readiness levels among nations. It provides historical context on payment methods, particularly the shift towards digital finance in recent decades. The benefits of this transition include enhanced efficiency and security, while potential drawbacks center around inclusivity concerns and reliance on technology. Ultimately, the pace and scope of this transition are contingent on the unique circumstances of individual countries.

Keywords: Productivity, Cashless Economy, Payment Methods, Technology

I. Introduction

I walked by a neighborhood hotdog joint on a Sunday morning and saw this on its door: "We have no cash."

That got me thinking: "We have no cash, so don't even think of robbing us," or "We have no cash as change," or "We have no cash because we only accept non-cash payments."

As I walked home, I quickly accounted for the consumer-payment journey I have gone through over the years and in different geographies. I saw the power of technology as an enabler of change.

II. A 40-Year Consumer-Payment Journey

When I grew up in Hong Kong in the 1970s, cash was the sole medium of exchange in the consumer space. In the 1980s, we would be out shopping with cash and credit cards but only use cards when the purchase was big and it was not viable to bring that much cash. People then saw credit card users as spending on loans unless they used American Express, which was a charge card (that one needed to pay off the full balance at the end of the monthly cycle instead of spending on credit).

In addition, American Express was a pioneer and leader in developing and distributing travelers' checks (or "cheques" in British English). Its travelers' checks were an innovation that provided a secure and convenient way for people to carry money while traveling, especially before the widespread adoption of credit cards.

Credit card usage was widespread in Singapore in the late 1980s and early 1990s. At the time, banks in Singapore had already integrated both credit and debit functions into a single card. However, upon arriving in Chicago in 1993, I was surprised to find that bank cards here at that time offered only a single function ___credit or debit, but not both. This might mean American banks had not fully integrated their internal systems with the global card networks.

Checks were a widely used form of payment in the U.K., including in some restaurants, during the 1990s. While cash and credit/debit cards were already popular, checks were still a common option for different types of transactions, especially for larger amounts or situations where card payments were less convenient or available.

In the past 40 years, since the 1980s, credit cards have been the predominant payment method in developed economies.

III. The Transition Into A Cashless Economy

The shift towards a cashless economy has been gradual over several decades, with notable acceleration during the 2010s and 2020s.

In a cashless economy, financial transactions are conducted without using physical currency but digital means such as bank transfers, credit/debit cards, mobile payment systems, digital wallets, and cryptocurrency. Technological innovations, the ease of digital transactions, and a growing demand for enhanced efficiency, security, and transparency in financial dealings frequently propel the shift toward a cashless economy (Open AI, 2023) [1].

Some key factors contributing to the cashless economy shift are:

1. Government Policies: Certain governments have proactively advocated for cashless transactions to enhance tax revenue, diminish black market operations, and foster financial inclusion. Sweden, for instance, is frequently recognized as a pioneer in the widespread adoption of cashless payments, with numerous businesses ceasing to accept cash. Similarly, countries like India have implemented measures to curtail cash usage, particularly through the demonetization initiative launched in 2016.

2. Digital Payment Systems: The emergence of electronic payment solutions, including credit and debit cards, mobile payment services (PayPal, Apple Pay, Google Pay, Alipay, WeChat Pay), and online banking, has significantly enhanced the convenience of making payments without needing physical cash. While certain payment systems have existed since the 1980s, they achieved significant acceptance during the 2000s and 2010s, leading to a remarkable surge in their development and utilization.

3. Smartphones and Mobile Banking: The proliferation of smartphones during the 2010s significantly enhanced the utilization of mobile banking services, facilitating quicker and more convenient cashless transactions. Mobile payment systems have emerged as the predominant method of financial exchange in China (81.15% of smartphone owners use this technology), Denmark (40.9%), and India (37.65%).

4. Contactless Payments: The advent of contactless payment cards and mobile wallets has significantly simplified the transition to a cashless economy. These payment methods became increasingly popular following the mid-2010s, especially in nations such as the United Kingdom, Sweden, and Australia.

A couple of years ago, I was impressed to learn that I could pay subway fares nationwide in China simply by tapping my mobile Alipay. Similarly, in London, I can use a digital or physical credit/debit card to pay for the subway system at a rate cheaper than buying a physical card from the station. And in Chicago, I can tap to pay my fares on the transit system, rather than purchasing a single-trip or fare storage card.

The cashless economy not only streamlines the use of humans but also machines.

IV. Leaders in the Cashless Economy

Nations at the forefront of a cashless economy typically possess robust digital infrastructure, extensive financial inclusion, and a broad acceptance of electronic payment systems. Below are some key examples (Open AI, 2023) [1]:

Country	Features	Drivers
Sweden	• Almost all transactions are digital • Banks and businesses often discourage cashtransactions • Widespread use of mobile payment apps like Swish	Government Role: Support cashless initiatives and digital payment security
China	• Dominated by mobile payment platforms like WeChat Pay and Alipay • QR code-based payments are ubiquitous, from street vendors to high-end stores	Adoption Drivers: Strong smartphone penetration and integrated services within payment apps
South Korea	• High usage of credit and debit cards • Integration of digital wallets and mobile payment systems like Kakao Pay and Naver Pay	Government Role: Encourage cashless payments for transparency and efficiency
Finland	• Almost universal use of debit/credit cards • Contactless payments are standard for everyday transactions	Adoption Drivers: Tech-savvy population and high trust in digital systems
U.K.	• Extensive use of contactless payments and digital banking • Services like Apple Pay, Google Pay, and PayPal are widely accepted	Trends: Increasing decline in ATM withdrawals
Netherlands	• Heavy reliance on card and mobile payments • Cash usage is minimal in urban areas	Adoption Drivers: Convenience and cultural acceptance of digital payments
Canada	• High penetration of contactless card payments and digital wallets • A robust banking system supports cashless Transitions	Consumer Behavior: Preference for convenience drives adoption
Australia	• Rapid adoption of contactless payments • Decline in cash transactions in favor of digital platforms	Infrastructure: A strong fintech ecosystem supports innovation
India	• Government-driven initiatives like UPI (Unified Payments Interface) • Popularity of apps like PhonePe, Google Pay, and Paytm	Policy Impact: Demonetization in 2016 accelerated the cashless transition
Singapore	• Integration of government-backed platforms like PayNow • High smartphone penetration supports digital transactions	Infrastructure: Seamless payment systems across sectors

A First-hand Experience in China:

My work used to take me to China often, and at one point, I even rented an apartment in Beijing to facilitate my frequent travel there. As a foreigner with no local currency-denominated credit card, I resorted to using cash most of the time and had more than once received counterfeit Renminbi. And since the highest note denomination is RMB 100 (~USD13.70), bringing a big pile of cash out is not quite convenient.

The introduction of payment apps such as Alipay and WeChat Pay made it so convenient to complete transactions online and in-store that it took me no time to adapt to China's cashless economy. Gone were the days when I needed to go to the bank and deposit payment to a vendor after I made an online purchase, communicated to the seller the payment reference number, and then wait for the merchandise to come to me, or sometimes, but rarely, for the vendor to agree on doing Cash On Delivery (COD). For me, the digital payment platform made a transaction seamless online, and most

convenient offline.

V. Benefits and Threats of a Cashless Economy

Transitioning to a cashless economy comes with both benefits and threats. Whether the benefits outweigh the threats depends on the context, including the economy's preparedness, its financial systems' robustness, and its digital infrastructure's inclusivity. (Open AI, 2023) [1] [2]

Below is an overview of some benefits of a cashless economy:

1. Reduce Business Risks and Costs:

- Cashless payments eliminate risks, including counterfeit currency (although stolen cards are still a risk), cash-specific employee theft, break-ins, or robbery.
- Once a business operates completely cashless, the costs of physical security, and physical cash handling (withdrawals from banks, transportation, counting) will also be reduced, as will the risk of not having enough cash for redemption.

2. Efficiency and Convenience:

- Streamlines financial transactions and reduces the cost of producing, distributing, and managing cash
- Reduces the need to carry and manage physical currency
- Enhances the speed of business transactions and online commerce
- Electronic payments are faster and easier than handling cash. U.S. restaurant chain Sweetgreen found that locations that operate cashless where customers use a payment card or the restaurant's mobile app process transactions 15 percent faster.

3. Financial Inclusion Opportunities:

- Digital platforms can reach unbanked populations, particularly in remote areas, through mobile payment systems.

4. Ease of Budgeting for Consumers:

- Cashless payments make it easy to track spending and document the movement of funds, a way to help consumers improve their spending budgets more efficiently.

5. Increase Transparency and Reduce Criminal Activities:

- Governments and organizations can monitor economic activities more effectively
- All transactions are recorded, making it difficult to launder money, evade taxes, conduct illegal transactions, and finance illicit activities.

- Numerous countries have implemented regulations, restrictions, or outright bans on private digital currencies such as Bitcoin in an effort to curb black-market and illegal transactions.

6. Better Collection of Economic Data:

- Rather than conducting expensive periodic surveys and sampling real-world transactions, governments and financial institutions can access detailed and real-time economic data for better policymaking and resource allocation.
- With recorded transactions, the government will have a better grasp of the movement of funds through financial records, allowing it to track illegal transactions in the country.

7. Globalization and Integration:

- Making it easier for cross-border transactions and integration into the global economy
- Facilitates the use of digital currencies and global payment systems

8. Innovation:
- Encourages the development of new financial technologies and services like mobile payments, blockchain, and digital wallets

9. Better Hygiene:
- Eliminates the handling of cash, which can carry germs and bacteria - a concern highlighted during pandemics

And, below is an outline of some threats to a cashless economy:

1. Exclusion of Vulnerable Groups:
- In the transition to a cashless economy, certain vulnerable populations, including the poor, near-poor, elderly, undocumented immigrants, and youth, may be at risk of exclusion. People who do not have the power or knowledge to initiate digital transactions will be left behind.

- Rural and underdeveloped areas with limited internet and banking infrastructure may face difficulties
- To use electronic payments to conduct transactions, people need to have a bank account where they can keep their money. Many poor people do not have bank accounts. In the United States, almost a third of the population lacks access to comprehensive basic financial services. According to the Federal Deposit Insurance Corporation (FDIC), nearly 25.6 percent of households with an annual income of less than US$15,000 do not have a bank account.

2. Economic Inequality:
- Wealth disparities could widen, as those without access to digital systems are excluded
- High fees and interest rates on digital payments could burden low-income individuals

3. Overspending Problem:
- Consumers tend to be less cognizant of their daily spending when using card transactions versus withdrawing budgeted cash from their wallets.

4. Privacy Concerns:
- Digital transactions can be tracked, raising concerns about surveillance and loss of financial privacy
- Potential misuse of data by governments or corporations

5. Centralized Control:

A completely cashless system, in addition to being able to track all transactions, would allow a central government to:
- Implement a transaction tax on every transfer between individuals
- Eliminate the means to circumvent negative interest rates by storing cash
- Totalitarian regimes could conduct more effective mass surveillance and quickly prevent certain individuals from purchasing items or earning money

6. Loss of Anonymity:
- Cash transactions allow for anonymous exchanges, which are impossible in a fully digital system
- Could impact personal freedom and financial autonomy

7. Cybersecurity Risks:

- Increased vulnerability to hacking, fraud, and identity theft
- Potential for massive disruptions during system failures or cyberattacks

8. Dependence on Technology:
- Relies on stable internet and power infrastructure, making it susceptible to outages
- People may be stranded without access to funds in case of technical issues

9. Resistance to Change:
- Cultural and generational preferences for cash may hinder adoption
- Businesses might face initial costs to adapt to cashless systems

VI. Conclusion

Undoubtedly, the world is transitioning into a cashless economy, enabled by technology.

Different states and regions adapt to the cashless economy at varying speeds due to various factors such as government policies, digital payment systems, smartphones and mobile banking, and contactless payments.

A cashless economy can help increase productivity by reducing transaction time, lowering administrative burden, improving security, enhancing economic efficiency, increasing economic participation, and promoting innovation and technology adoption. However, it is important to balance these productivity benefits with potential threats, particularly impacts to its biggest stakeholders, the people.

The transition to a cashless economy has emerged as a significant trend among nations pursuing economic development. However, the speed and extent of this transition varies depending on the unique needs and circumstances of the individual country rather than a one-size-fits-all approach.

Reference List:

1. OpenAI. (2023). ChatGPT (Mar 14 version) [Large language model]. https://chat.openai.com
2. Wikipedia (Chinese) retrieved on Decmember 30, 2024: https://zh.wikipedia.org/zh-cn/%E7%84%A1%E7%8F%BE%E9%87%91%E7%A4%BE%E6%9C%83.

Labour productivity in india declining impacting competitiveness of labour-intensive sector like food processing

Rajat K Baisya
President, Project & Technology Management Foundation

Food processing industry in India is a labor-intensive industry. Over 90% of the industry is still unorganized performing the processing and packaging manually engaging labors including female workers in large numbers. Some of the typical manufacturing units in processed food sectors like fruit and vegetable processing, marine fish processing, traditional products like papads, pickles, spices, bakeries and cereal products are mostly labor intensive carrying out processes manually. Labor productivity, therefore, determines the competitiveness of food products in domestic and international trade. Labour productivity in India is as such low and now even it is declining. Our farm level productivity is also low in comparison to other developing and developed nations.

As per the report of the Ministry of Food Processing, Govt of India, during the last eight years ending 2022-23, Food Processing sector has been growing at an Average Annual Growth Rate (AAGR) of around 5.35%. Gross Value Added (GVA) in Food Processing sector has increased from INR 1.61 lakh crore (USD 18.9 billion) in 2015-16 to INR1.92 lakh crore(USD 22.6 billion) in 2022-23 (as per the First Revised Estimates of Ministry of Statistics and Programme Implementation, Govt of India).The food processing industry in India employs around 7.04 million of workforce in registered and unregistered units. The data from the unregistered and unorganized sector of food processing is still not very reliable. Most of the workers in the industry have not received any formal or informal skill training. As per the latest Annual Survey of Industries (ASI) report showed that the employment in Food Processing Industries has increased from 1.77 million in 2014-15 to 2.68 million in 2021-22. This represents employment in the organized sector indicative of the fact that hardly there is any increase in terms of labour employment in this sector.

The percentage share of processed food exports in total agri-food export has gone up to 23.4% in 2023-24 from 13.7% in 2014-15 an increase of 9.7 percent in ten years. However, in terms of the share of processed food products as a percentage of global trade, it is still very low and stands at less than 2 percent.

It is generally considered that the food processing industry in India is one of the major contributors to employment and the economy. According to the Ministry of Food Processing Industries (MoFPI), the sector employs around 1.93 million people, accounting for 12.38% of employment in the registered factories or organized sector and around 7 million people across the registered and unregistered sectors. The break-up is like: Registered (Organized) sector: Employs about 1.93 million people and Unregistered(Unorganized) sector: Employs around 5.1 million people “.”

A recent study indicates that labour productivity is in fact declining. In a labor-intensive sector like food processing, if the labour productivity is declining, how can the industry become globally competitive.

India International Centre (IIC) organizes a conference every year to review Indian Economy by independent researchers and economists. This year the annual conference was held at IIC on 24th Dec 2024. This is the 10th Edition of the Annual Discussion on 'State of the Indian Economy'. Surojit Mazumdar, Professor of Economics at Jawaharlal Nehru University (JNU) has presented a paper to discuss about the decline in labour productivity in India as shown in Table 1 below.

Table 1: Indices of Labour productivity (value added at constant prices per person employed) 2017-18 to 2023-24 (taking 2017-18=100)

Sector	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Economy	100	102.0	98.0	88.5	94.9	98.0	97.6
Manufacturing	100	104.5	99.8	101.2	103.7	98.3	
Service	100	100.5	101.0	89.2	95.2	100.5	
Agriculture and Food Processing	100	101.1	94.6	91.3	94.6	97.8	

Source: Capital, Labour, Energy, Materials and Services Database published by Reserve Bank of India

From the above Table1 across sectors labour productivity as well as Indian Economy has declined since 2017-18. In 2018-19 there was a slight increase in labour productivity in the Agricultural sector but started declining thereafter.

Agriculture sector still engages over 50 percent of the total labour forces in India but its contribution to the economy has declined over the years. Agriculture sector contributes about 17 percent of the Indian economy now but provides employment to about 58 percent of the working population including temporary and seasonal farm labours. While service sector's contribution to Indian economy has increased to over 50% but that provides employment to about 31 percent of the working population. Whereas manufacturing sector's contribution is about 17 percent of the Indian economy, and it employs 57.3 million workers. These 57.3 million workers should include 7 million workers engaged in Food processing industry, organized and unorganized sectors put together. In other words, the processed food industry engages 12 % of the total workforce in manufacturing industry. This is the scenario when processed food industry is still highly labour intensive and also largely in unorganized sector. And that too when labour productivity is declining. In India, despite the growth in employment in service sector, large number of work force is still engaged in agricultural sector.

We have been talking about the significant contribution of the processed food industry in India and we still regard that as sunrise industry. If the food industry in India has to grow, the food products have to be globally competitive, which is not happening, and key reason is that productivity is not improving in real terms. Productivity is the reflection of the efficiency of the system and is measured as output against a given input. The total factor productivity covering input of men, machine, money and material(4M) and now we can also include technology (method) making it 5M needs to deliver expected and comparable productivity level of Agriculture and Food processing sector of other countries. For a labor-intensive industry labour productivity would make a lot of difference particularly when infusion of technology, process automation and mechanization is still at a low level. If investment is made in technology, labour engagement will further reduce. If the processed food industry is seen as an avenue of employment of labors, industry has to grow. If skill level increases, then labour requirement will reduce further unless production increases. Also, production can increase when demand increases, and demand will increase if competitiveness increases to compete in global trade which is a function of farm level productivity, labor productivity and technology absorption. But the current growth rate of 5.35% is not indicative of any significant growth. As this is value growth rate, hardly there is any real term growth in the industry.

In terms of production, India has the distinction of featuring as no1 producer in many items including milk, and cattle population. But in terms of per capita domestic consumption as well as global ranking in terms of export of food and agricultural products, India's rank is at the lowest level. Our task is therefore two-fold. One, to embrace new technologies and automation to improve quality and cost competitiveness and two, skill development of workforce to improve labour productivity. If this happens, prices should reduce, triggering growth in consumption to engage more workforce in a growing sector exploiting opportunity in global trade. As more than 90 % of the processed food industry is unorganized, infusion of technology which requires investment is unlikely to happen. Skill development and Business Process Reengineering (BPR) together with cluster approach seems to be a plausible solution under the circumstances.

Maximizing productivity in small businesses: strategies for streamlining operations, enhancing efficiency, and boosting profitability

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Abstract
More often than not, both with financial capital and human assets, small enterprises labor under constraints and yet are forced to be competitive and sustainable in dynamically changing markets. Notwithstanding such limitations, small enterprises have become most crucial players in the global economy as spurs to job creation, innovation, and economic development. Managing small businesses effectively through these challenges will require the business owner to increase productivity to realize operational success, create a great working environment to enhance employees' satisfaction, and ensure long-term sustainability. This research paper prescribes useful and practical strategies for a small business owner to streamline his/her business operations, improve efficiency, and optimize profitability.

The paper will discuss numerous approaches to process optimization while referring to the identification and doing away with inefficiencies in the workflow, costing in effect to productivity that such actions take. It also discussed effective time management strategies, which would help the owner in focusing on high-impact tasks, delegating responsibilities effectively, and managing time efficiently. They also point out how it drives productivity through the automation, which reduces repetitive tasks, further reducing manual errors and thus allowing time to pursue strategic pursuits more carefully. Employee engagement results in productivity, and this article presents ways that would create a positive, motivated, and committed workforce by means of recognition and opportunities of growth, as well as ensuring a healthy balance between work and life. These strategies place the small business owner in a position to gain efficiency, cut costs, and raise performance in every dimension possible, which obviously leads to more tangible profitability. It seeks to make small business owners create a well-balanced, sustainable, and highly productive business atmosphere capable of long-standing success and growth.

Introduction
Small businesses face a range of unique challenges in today's dynamic, fast-paced marketplace. They are often resource-constrained in terms of both human resources and staff, financial capital, and technological infrastructure compared to large firms. This infuses a higher sense of agility and adaptability in small businesses in order to maintain a competitive advantage. But the urge has doubled over time for these small businesses to ensure maximum efficiency, with exponential technological advancements being increased, escalating customer expectations, and economic uncertainty. With high competition around and no margin for mistakes, small enterprises have to abide at all the required levels in continuously working out new and evolving dimensions of interest areas to be efficient and to lean out every section of their business functioning. This is a process that goes beyond getting things done on time, and at the core, it is resource management-ensuring that any activity adds value to the convergence on overall corporate objectives. Small business process owners need to redesign current workflows proactively, accepting new technology, as well as get started on improving processes to achieve better results.

Importantly, one also realizes that time management carries an important weight. In fact, small business owners often have to perform a high-wire act between running day-to-day operations and leading the strategic planning of an enterprise. Principles in time management that call for working on high-impact tasks, delegation, and reduction of time allowances for low-impact activities become very important in maintaining focus and optimizing productivity.

Technology has thus become more and more key to facilitating operations and cutting down on repetitive works.

Affordable and reach-out tools further help entrepreneurs in streamlining small business and solving customer demand. Tools are prepared to handle internal process efficiency.

Finally, enhanced productivity in a small business is equal to the development of highly performing and devoted workforces. Workers feel supported, valued, and empowered to deliver results when a business attains productivity-in this case, they have an inclination towards producing results and delivering the business to success. This is how increased productivity could lead to a high-performance, innovative culture within an SME.

This paper further discusses the critical strategies in order to give relevance to the information required and provided, assisting small business owners to enhance operations and thereby maximize efficiency and profitability in a competitive and ever-changing market.

The Importance of Productivity in Small Businesses

Productivity in small business helps to achieve maximum output with meager resources. There's nothing like working harder but working smarter to optimize operations and increase efficiency within the firm. High productivity brings benefits in relation to the following:

- **Improved Efficiency**: Streamlined operations minimize time and effort, which in turn help to drive costs down and increase speed, allowing businesses to perform more work with less resource expended.

- **Better Profitability**: Increased productivity leads to reduced operating costs and higher output, thus directly increasing profitability by improved margins and being able to reinvest in business expansion.

- **Improved Customer Satisfaction**: Streamlining processes allow businesses to respond to customers' needs much faster, thus improving service delivery, which nurtures customer loyalty and repeat business.

- **Sustainable Growth:** Enhancements in productivity help small businesses grow sustainably, scale efficiently by managing increased demand without overstretching resources or sacrificing quality.

- **Employee Morale and Retention**: The happy working environment increases satisfaction among employees, reduces the level of turnover, and, with engaged staff, acts as a business success driver.

- **Competitive Edge:** More productive businesses can afford to charge better prices, to give faster services, and to offer a better quality of service/product, subsequently gaining a competitive edge on the market. *

In sum, productivity lets small businesses thrive in terms of operational efficiency, profitability, customer satisfaction, and growth.

Process Optimization: Simplifying Operations for Maximum Efficiency

One of the most efficient methods for small businesses to maximize productivity is by optimizing their business processes. Process optimization entails examining workflows, recognizing inefficiencies, and restructuring processes to remove redundant steps. By simplifying operations, businesses not only save time but also incur lower costs and higher quality output.

1. Examining Current Processes

The first process optimization step is to carry out a thorough analysis of existing workflows. Business owners should identify their operations and key processes, such as sales, inventory management, procurement, and customer service, and examine how efficiently these are being executed. Mapping out workflows will involve identifying bottlenecks or points where sentences take longer to execute than they should be

2. **Implementing Lean principles:** The lean principles ward off any wastage, be it time, resources, or effort. Heading on with the example, lean practices in businesses can be suitably supported by small sized business owners for executing simplification and cutting down on redundancies. Instead of delegating several individuals to review the same task, businesses can reduce steps or make clear what roles individuals play to reduce overlapping.
3. **Standardizing Procedures:** Once the inefficiencies are identified, businesses should implement standardized operating procedures (SOPs) to maintain consistency and bring efficiency in small tasks. SOPs ensure that the team follows the same way of doing things, hence reducing mistakes and saving time on training new recruits.

4. Outsourcing Non-Essential Functions

Small businesses usually have a problem with the breadth of their operations. This makes outsourcing appropriate for small businesses looking to offload work functions relating to accounting and customer support, among others. That way, businesses will be able to focus on activities that directly increase their profitability.

Time Management Strategies for Small Business Owners

Time management is an essential portion of productivity; this is even truer for small business owners with numerous tasks at a go. Ineffectual time management can result in missed deadlines, tired workers, ineffective planning, and missed opportunities to generate revenue. All the more for this reason, business owners must properly manage time for greater productivity.

1. Prioritize Tasks with Great Impact

Business proprietors should focus on high-impact activities that quickly enable business growth and increase profitability. Through proper prioritization according to importance and urgency, then crucial business activities can be conducted first and in the process avoid clogging of crucial areas. The Eisenhower Matrix is used to categorize activities based on urgency and importance.

2. Responsibility Delegation

Business owners aren't supposed to handle everything. Assigning jobs to competent staff and outsourcing work wherever you have to can keep you from becoming exhausted - and boost productivity. Effective allotment of jobs lets owners do further strategic work in growing the business.

3. Time Blocking and Scheduling

Time-blocking is allocating specific time intervals for certain activities. This method reduces disturbances and ensures that primary meetings are conducted within the appropriate time frame. When the meetings, assessments, and topical check-ins are scheduled, it is easier to keep in line with the progress of projects and hold teams accountable for their responsibilities.

4. Do Not Multitask.

Research findings, however, point out that multitasking runs the risk of reducing performance by diluting attention to a great degree. Small business owners should stick to a single task that will engender high levels of attention and performance. Literature has shown that multitasking can actually cause more mistakes to be made and delay the carrying out of each task

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Technology Integration: Leveraging Tools for Automation

In today's digital age, technology plays a crucial role in enhancing productivity. Small businesses can benefit from a wide range of software tools that help automate repetitive tasks, streamline workflows, and provide real-time insights into performance. Embracing technology is essential for staying competitive in the market.

1. Project Management Tools

Project management software such as Trello, Asana, or Monday.com can help small businesses track tasks, deadlines, and team performance. These tools provide transparency and ensure that everyone is on the same page, reducing the chances of miscommunication and errors.

2. Customer Relationship Management (CRM)

A CRM system helps businesses track customer interactions, manage leads, and optimize sales processes. By centralizing customer data, businesses can improve customer service, identify sales opportunities, and build stronger relationships with clients.

3. Accounting and Invoicing Automation

Accounting software such as QuickBooks, FreshBooks, or Xero can automate invoicing, expense tracking, and financial reporting. Automating these tasks reduces human error and saves time, allowing business owners to focus on more strategic initiatives.

4. Inventory Management Software

For businesses that deal with physical products, inventory management tools such as TradeGecko or Zoho Inventory can help track stock levels, manage orders, and prevent overstocking or stockouts. This ensures that businesses maintain an optimal inventory level while avoiding the costs associated with excess stock.

Employee Engagement: Building a High-Performance Workforce

Workforce high in engagement is one of the most powerful drivers of productivity. Workers who are engaged are more committed towards achieving business goals, work in a more efficient way, and provide good service to customers. Small business needs to develop a positive work culture that can motivate its employees.

1. Clear Communication and Transparency

Effective communication is what creates a productive working environment. Small business owners should ensure that their employees have clear company goals, the standards of performance expected, and the work currently in progress. Moreover, openness in decision-making encourages trust and loyalty.

2. Enabling Development Opportunities

Employees who believe in the existence of opportunities in professional development are more likely to stay motivated and engaged. As such, small business entrepreneurs should provide training, mentorship, and opportunities for career growth to enable the personal and professional development of the employees.

3. Appreciation and Appreciation of Performance

Regular appreciation and rewards for the hard work and accomplishments of employees result in increased morale and solidified affirmative behaviors. Recognition can take several forms: a simple thank-you note, a complex formal recognition program, or a bonus system.

Small business owners should promote work-life balance through flexible work schedules and paid time off for their employees. These actions will make employees somewhat inured to burnout, maintaining their health and well-being while being able to work productively for the business.

Sustainability in Productivity: Long-Term Growth Without Burnout

What appears in productivity front tend to balance the growing expansions in business with the staff involvement and take measures for the prioritized long-term well-being. Small business owners can implement satisfaction and work that deem quality while not compromising the heath and work-life balance of their staff.

1. Set Realistic Goals

Establishing unrealistic expectations can be the source of burnout and disappointment. Business owners should establish manageable and quantifiable goals that help employees win without getting overwhelmed. Monitoring progress from time to time ensures that goals are being achieved with minimal stress.

2. Investing in Employee Well-being: Sustainable productivity happens when business people work to encourage living working conditions. The owner invests in the employee well-being in terms of health initiatives, mental well-being, and the appropriate tools to avoid burnout

3. Learning Organization

Small businesses should become learning organizations, whereby they encourage feedback and innovation. Improvement and constant reviews of processes allow the business to become adaptive and resilient to stay afloat in today's competition, which is upbeat

Recommendations to Maximize Productivity in Small Businesses

1. Simplify Work with Process Optimization

Small business owners should occasionally re-look at and simplify how they do things to eliminate non-value-adding activities. Adopting lean practices, such as removing unwanted steps or automating duplicate processes, often lead to considerable time and cost savings. With a periodic re-look at the business process, it will help to ensure proper use of resources and, therefore, optimize productivity.

2. Adopt Effective Time Management Techniques

Effective time management is all about productivity. Small business owners have to master the art of impact and urgency, practicing priority delegation wherever possible while setting clear daily or weekly goals. Tools like time blocking or Eisenhower Matrix may help an owner stay on high-value activities while really cutting back on all distractions.

4. Automate with Technology

Use cost-effective software that automates functions, such as routine administrative works in billing, inventory management, and customer relationship management. Automation saves time for more strategic activities and allows small business owners to focus on growth and innovative work while simultaneously improving operational efficiency

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5. Motivate and develop people.

A productive workforce will deliver productivity. Managers of small enterprises must ensure that their respective workforce is productive oriented by enhancing their competence through training, providing feedback, and acknowledging the good work done by their employees. Good working conditions, like enhanced welfare of the employees, enhance morale, leading to increased retention-two principles for always remaining productive.

Productivity is not a one-off exercise but a sustained objective. Small businesses should practice the use of performance metrics to monitor efficiency levels, pinpoint weaknesses, and bring about necessary adjustments. Monitoring regularly sees to it that productivity adjustments march in harmony with the business at large and market demand, hence long-term growth support.

Conclusion

Maximization of small businesses is very essential for long-term success and survival. As the market grows increasingly fast and competitive, small business owners have to optimize every aspect of their operation in order to gain success. Optimizing processes, workflows, time, and technologies can be enormous efficiency gains for the owners, with the benefit of cost reduction. Another strategy to improve performance and sustain growth is motivating and engaging the workforce.

Even though small businesses mostly face limited resources and high variability, this paper has laid out the best approaches to overcoming these challenges. Small businesses could retain competitiveness and resilience only through business improvement handed down from working more productively while re-evaluating and improving their operations.

But productivity is not just about doing more; it's about working smarter-focusing on the right things, using the available resources most effectively, and prioritizing what really matters. An organization focused on productivity creates an environment where people are empowered, satisfying the needs of customers, and growing in the process but not at the expense of quality and well-being.

In conclusion, small business owners who pursue productivity do so, not just to survive, but to do more than just survive in this ever more complex and dynamic marketplace. These more effective work methods finally raise small business to their full potential-ensuring not only that the bottom line but also that the staff bottom line is indented for permanent prosperity.

Additional Sources:

1. Harvard Business Review

There exist numerous articles, cases and research papers on the Harvard Business Review site regarding issues on business productivity, leadership, and operations management, among others. The site will give insights to a small business owner on how best to have an optimized operation to increase efficiency.

Website: https://hbr.org

2. Small Business Administration

The SBA provides many resources for increasing productivity and growing a small business, among other management challenges that arise in its operation. Its materials contain articles, templates, and experts' advice

Website: https://www.sba.gov

3. Inc. Magazine
Inc. is everyone's first pick among entrepreneurs and small business owners. It offers business how-to's and advice on productivity, leadership basically also involved with technology and business operation how-to's to keep owners always ahead of competition.
Website: https://www.inc.com

4. "Work Rules!" by Laszlo Bock
Bock, who was Google's former SVP of People Operations, distills some pragmatic lessons on how companies can build wildly productive, super-effective, and totally 'fired up' workforces. This book will help a small business in principles aimed at bettering engagement of employees and boosting productivity.

5. "The One Minute Manager" by Ken Blanchard and Spencer Johnson
This classic business book demonstrates simple, common-sense controlling principles of time and increased productivity for business. His easy ways of delegation and communication and goal setting are ideal for the small business owner.

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AI-Driven productivity optimization: predictive strategies for mitigating employee burnout and enhancing performance.

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Abstract:

This paper discusses how artificial intelligence could be used to increase productivity and help employees' well-being in today's workplaces. By using the ability of AI to monitor work patterns, recommend the best schedules, identify burnout triggers, and suggest tailored interventions, organizations can enhance their productivity while reducing stress levels. This study reviews the implementation and outcomes of AI-driven strategies in various industries to provide an overview of their effectiveness in creating more productive and health-enhancing work environments.

A mixed-method approach will be followed, covering quantitative analysis of productivity metrics and qualitative assessment of employee well-being. Data collection will involve longitudinal studies of organizations before and after the implementation of AI-driven productivity optimization systems, along with case studies across technology, healthcare, and finance sectors.

The key areas of emphasis are the development of machine learning algorithms aimed at interpreting complex workplace data for the identification of individual productivity patterns and possible stressors. This study examines how these algorithms can be tailored to deal with industry-specific issues and organizational cultures, along with the concurrent consideration of ethical implications related to AI-based monitoring and intervention in the workplace.
This paper discusses the psychosocial aspects related to AI-facilitated productivity improvement, addressing the perceptions and interactions of employees with such systems. Moreover, it will evaluate long-term impacts on organizational culture, team dynamics, and leadership methodologies concerning how managerial roles could be transformed within an AI-enhanced work environment.

This paper tries to make a significant contribution to the field of productivity science by conducting an elaborate analysis of the potential of artificial intelligence in improving productivity and the well-being of employees. The results are thus expected to contribute to the development of more advanced AI systems for workplace environment optimization and to help organizations integrate such technologies responsibly and effectively.

Introduction:

With modern business being a fast-evolving world, organizations are faced with the twin challenge of improving productivity while safeguarding the welfare of their staff. Herein comes artificial intelligence, which presents an unprecedented opportunity to address these two critical aspects of the workplace simultaneously and find new solutions for age-old issues.

This article addresses how artificial intelligence-and its complex role-can play a part in increasing productivity while reducing employee burnout across a wide variety of industries. By applying machine learning techniques and advanced data analytics, it is possible to use AI-driven frameworks to gain incredible insight into personal working behaviors, helping to develop strategies that can enhance their efficiency while reducing stress levels. Our research focuses on four key areas where AI can be of significant benefit:

Analysis of work pattern for individuals: AI algorithms can process large workplace data to identify trends and patterns in the work habits of employees, establishing a foundation for strategies in personalized productivity.
Optimal Work Schedule Recommendations: AI systems take into account diverse variables-peak productivity times,

fluctuations in workload, personal preferences-to recommend schedules that will maximize efficiency while allowing work-life balance.

Identification of potential burnout risk factors: Through continuous surveillance and analysis of various indicators, artificial intelligence detects early signs of stress and potential burnout, thus allowing for early intervention.

Suggestion of personalized intervention strategies: Based on individual profiles and identified risk factors, artificial intelligence suggests tailored interventions to prevent burnout while maintaining consistent high productivity.
This research adopts a mixed-methods approach that includes quantitative assessment of productivity measures and qualitative studies of employee welfare. We consider case studies from various industries, analyze empirical evidence, and review theoretical perspectives to determine how effective AI-based interventions are in improving workplace productivity and workers' well-being.

This research also discusses the ethical implications of the deployment of artificial intelligence in workplace management, including issues of privacy, individual autonomy, and the changed role of human managers in an AI-enhanced work environment. Taking a closer look at the ability of AI to augment productivity while, at the same time, promoting employee well-being, this study aims to make substantial contributions to the field of productivity science and to help organizations use AI technologies responsibly and effectively.

AI-Driven Productivity Enhancement: Key Areas of Influence

The paper explores four critical areas where artificial intelligence can serve to enhance productivity in the workplace and reduce employee burnout:

1. Analysis of Work Behaviors at the Individual Level

Artificial intelligence algorithms can be incredibly adept at parsing large datasets to identify trends and patterns in work behaviors of employees. One study by Deloitte revealed that organizations that use AI-driven analytics experience a 17% increase in productivity coupled with a 25% reduction in employee turnover.

The significant improvement seen reflects the potential of artificial intelligence to transform both workplace productivity and employee retention. Microsoft's Workplace Analytics tool is one of the most relevant examples of the practical application of AI in this area. By analyzing email and calendar data, the tool provides important insights into how employees allocate their time and identifies potential areas for improvement.

This analytics-driven approach allows organizations to:
- Identify inefficiencies in work processes
- Optimize meeting schedules and duration
- Identify and encourage productive behaviors
- Reduce time spent on non-core activities

The granular-level insights generated by AI-driven analytics allow for the creation of productivity plans that can be tailored to individual employees or teams. For instance, the system may show that certain workers are most productive at particular times of the day, enabling the development of personalized work routines that optimize efficiency. AI can also detect patterns that may presage burnout, such as:
- Increased working hours outside of normal business hours
- Reduced interaction with colleagues

- Decreased participation in collaborative projects

Identification of these patterns at an early stage enables the organization to take necessary measures in order to avert burnout and maintain a high level of productivity. Usage of artificial intelligence in analyzing work patterns represents a large shift away from traditional, one-size-fits-all approaches of productivity management. This will enable a much more detailed, data-driven perspective for developing more appropriate strategies to raise the performance of individuals and the organization.

Ideal Work Timetable Suggestions

AI systems have revolutionized the approach to work scheduling, offering tailored solutions balancing productivity with employee well-being. This is further validated by the case study from IBM's Watson Work platform, which showed a 12% rise in overall productivity and a 23% improvement in employee satisfaction scores, further proving the potential of AI-optimized schedules.

These AI systems take into account the following factors in creating optimal work schedules:

Peak Productivity Times:

AI algorithms analyze individual performance data to identify when each employee is most productive. For example, some workers may be most productive during the early morning hours, while others may do best in the afternoon or evening. By aligning work schedules with these natural rhythms, organizations can maximize output and quality.

Workload Fluctuations:

AI systems will be able to predict and respond to changes in workload over various periods. The ability to do dynamic scheduling-that is, scheduling in a manner that dynamically adjusts resources to meet demands during high-usage periods and to prevent overwork during slow times-means a retailer can adjust staffing levels based on anticipated customer traffic and ensure optimal coverage without overstaffing. Personal Preferences and Commitments:

AI considers individual preferences and commitments in making the proposal for schedules. This could include factors such as:

- Preferred working hours
- Family responsibilities
- Learning activities
- Medical appointments

By considering these factors, AI-based scheduling helps to provide a better balance between work and life, potentially reducing stress and burnout.

Moreover, AI scheduling systems can adapt in real-time to unexpected changes. For example, if an employee falls ill, the system will be able to quickly reorganize tasks and schedules in a way that will minimize disruption. This can be particularly useful in industries with variable demand, such as healthcare or customer service.

The implementation of AI-optimized schedules has been showing promising results across different sectors. A study in health care shows that AI-driven nurse scheduling can save 30% of overtime and improve quality patient care by 15%. Meanwhile, a top logistics company also reported a 20% increase in the efficiency of delivery after introducing an AI scheduling platform for drivers.

The application of AI scheduling systems requires serious regard for ethical consideration and the employee's privacy;

it is also not transparent unless organisations are open about the decision-making processes of the AI and its channels for providing opportunities for the employees to give inputs and feedbacks on their respective schedules.

As artificial intelligence technology continues to advance, there will be more sophisticated scheduling solutions that not only boost productivity but also satisfy the general satisfaction and well-being of employees. This holistic approach toward scheduling reflects a significant evolution in building a more effective and employee-oriented work environment.

Identification of Potential Burnout Risk Factors

The ability for artificial intelligence to recognize early markers of stress and potential burnout through constant surveillance and assessment of different metrics has been a great stride in managing workplace well-being. One article published in the Journal of Medical Internet Research states that, using AI algorithms, the prediction accuracy of employee burnout goes up to 80%, even three months ahead, a feature that might revolutionize how proactive stress in the workplace is regulated.

Top Indicators Analyzed by AI

1. Changes in Communication Patterns:
AI systems can analyze the following aspects of communication by employees:

- Number of emails sent and received
- Tone and sentiment of written communications
- Response time to messages
- Virtual meeting participation

For example, a sudden drop in communications or a change in tone to more negative might suggest that the employee is under stress.

2. More Overtime Hours:
AI can monitor:
- Time logged into work systems outside normal working hours
- Number of late-night work sessions
- Patterns of weekend work
  Persistent overtime may indicate an unsustainable workload or an inability to manage tasks efficiently

3. Reduced Team Activity Engagement:
AI tracks the following:
- Team meeting participation rates
- Contributions to group projects
- Interaction with colleagues on work platforms

A decrease in any of these areas may indicate withdrawal or disengagement, common precursors to burnout.
Extended Factors AI Can Examine

In addition to the above key metrics, more sophisticated AI applications can track a wider variety of factors, including:

4. Work Output Variations:
- Sudden shifts in productivity rate

- Inconsistency in work quality
- Missed deadlines or increased error rates

5. Digital Behavior Patterns:
- Increased time spent on non-work-related websites during work hours
- Changes in software usage patterns
- Frequency of breaks taken during work hours

6. Physiological Indicators (available):
Heart rate variability data from wearable devices
- Sleep patterns
- Physical activity levels

Implications and Applications

With such high accuracy and advance notice, the potential of AI to predict burnout gives organizations a powerful tool for preemptive intervention. This capability allows for:

- **Personalized support strategies:** Tailoring interventions to meet individual needs, before burnout occurs.
- **Workload reallocation:** Adjustment of task distribution to avoid overload.
- **Targeted wellness programs:** Implementing specific stress-reduction initiatives based on identified risk factors. One case study reported from a leading multinational tech organization showed that with the use of AI-driven burnout prediction, stress-related leaves can be reduced by 35%, and overall, employee satisfaction scores can improve by 28% in a year.

Ethical Considerations

While the potential benefits are significant, the use of AI for burnout prediction raises important ethical questions:
- Privacy concerns: Ensuring that data collection and analysis respect employee privacy rights.
- Transparency: Communicating clearly to employees about how their data is being used.
- Consent: Obtaining appropriate permissions for monitoring and data analysis.

Future Directions

As AI technology evolves, we can expect even more sophisticated burnout prediction models. Future developments may include:
- Integration with wearable devices to collect more accurate biometric data
- Natural language processing of verbal communications in addition to written ones
- Predictive models that can propose tailored interventions for specific risk profiles

The use of AI can enable earlier burnout detection and create a more supportive work environment, possibly resulting in better well-being among employees, reduced turnover, and greater productivity overall.

Recommendation of Tailored Intervention Strategies: AI-driven systems have revolutionized the approach toward employee well-being through personalized intervention strategies tailored to individual needs. This targeted approach is not only preventing burnout but also sustaining high productivity levels across organizations.

AI-Driven Personalization

AI algorithms analyze large reams of data to create detailed individual profiles, including factors such as:
- Work patterns and productivity trends

- Communication styles
- Stress indicators
- Personal preferences and interests

From these profiles and identified risk factors, AI can suggest interventions that are tailor-made for each employee.

Examples of Tailored Interventions

1. **Customized Work Schedules:** AI may recommend flexible working hours for those employees who demonstrate symptoms of poor work-life balance.

2. **Learning Opportunities:** If an employee is struggling to complete certain tasks, AI may propose specific training modules that will help to address the deficiency.

3. **Wellness Activities:** Based on the individual stress patterns of each employee, AI can suggest personalized meditation sessions, exercise regimes, or mindfulness practices.

4 **Social Connections:** For isolated employees, AI may recommend team building activities or mentorship programs

5. **Workload Adjustments:** AI can suggest task redistribution or deadline extensions for those at high risk of burnout

Case Study: Limeade
Limeade, an employee experience platform, exemplifies the successful implementation of AI-driven personalized interventions. By using AI to suggest tailored well-being activities, Limeade reported a significant 20% reduction in stress-related absenteeism among its clients. This demonstrates the tangible benefits of AI-powered personalization in workplace wellness programs.

Broader Impact on Organizational Performance
The use of AI-driven approaches for personalized interventions contributes to the creation of more efficient and healthier work environments. A larger study by Accenture shows the very tangible positive effect it has on outcomes, including:

- 38% increase in revenue per employee
- 54% improvement in employee retention rates

These figures are clear testimony to the big benefits organizations stand to gain from investments in AI-powered productivity and well-being solutions.

Ethical Considerations and Future Directions

As we further explore and implement AI-driven personalized interventions, ethical implications-especially those related to privacy and data security-need to be addressed. To this end, organizations should ensure the following:

- Transparency in data collection and usage
- Adherence to data protection regulations
- Obtaining consent from employees and providing opt-out options
- Regular auditing of AI systems to eliminate bias

Future research should focus on developing robust frameworks for the responsible use of AI in productivity

optimization and employee well-being initiatives. This includes:

- Creating industry-wide standards for the ethical implementation of AI
- Creating methods to measure the long-term effects of interventions driven by AI
- Exploring how best to combine AI recommendations with human expertise

With these challenges and opportunities in mind, organizations can bring out the full potential of AI-driven personalized interventions to create a workplace that is more productive, healthier, and yields greater job satisfaction.

In other words, the integration of artificial intelligence technologies in workplace management reveals promising options to increase productivity, decrease burnout, and lower levels of stress. Some practical examples of AI applications in this regard include:

1. Microsoft's Workplace Analytics: This tool uses artificial intelligence to analyze email and calendar data, providing insights on how employees spend their time and identifying areas for boosting productivity.

2. IBM Watson Work Platform: This AI-driven platform is used to optimize work schedules, which improves productivity and employee satisfaction.

3. Limeade: Employee experience platform uses AI-driven technology in delivering personalized well-being activities that decrease stress-related absenteeism.

Those AI-driven approaches have brought considerable benefits, such as an increase in revenue per employee and better retention rates. However, it is also imperative that organizations using these technologies be considerate of ethical implications and the privacy and data security of employees. The future will focus on the creation of responsible AI frameworks that balance productivity optimization with employee well-being. By utilizing the capabilities of artificial intelligence and concurrently addressing possible apprehensions, organizations can foster more efficient, healthier, and more fulfilling work environments that yield advantages for both employees and organizational profitability.

For those interested in delving deeper into the subject of AI-driven productivity optimization and burnout prevention, the following resources are recommended: Books:

1. "The AI-Powered Workplace" by Jason Corsello
2. "AI Superpowers: China, Silicon Valley, and the New World Order" by Kai-Fu Lee
3. "Human + Machine: Reimagining Work in the Age of AI" by Paul R. Daugherty and H. James Wilson
   Websites and Online Resources:

1. MIT Sloan Management Review (sloanreview.mit.edu) - Articles on AI and workplace productivity
2. Harvard Business Review (hbr.org) - Section on Artificial Intelligence
3. World Economic Forum (weforum.org) - Reports on the future of work and AI

Academic Journals:
1. Journal of Artificial Intelligence Research
2. AI Magazine
3. International Journal of Human-Computer Studies

Industry Reports:
1. Deloitte's annual "Tech Trends" report

2. McKinsey Global Institute's publications on AI and automation
3. Gartner's research papers on AI in the workplace

Online Courses:
1. Coursera's "AI for Everyone" by Andrew Ng
2. edX's "Artificial Intelligence for Business" course

These resources are a compendium of scholarly researches, pragmatic approaches, and industry news in using artificial intelligence to augment employee welfare and productivity.

The quest for quality and productivity in the age of AI

prof PB Sharma

Vice Chancellor Amity University Gurugram

"The age of AI presents both opportunities and challenges for quality, productivity and sustainability. By embracing a holistic approach that considers the ethical, environmental, and social implications of AI, we can harness its power to create a future where quality of life is enhanced, resources are used sustainably, productivity is significantly improved, and the planet is protected for future generations. The quest for quality, productivity and sustainability in the age of AI is not just a technological endeavor; it is a societal imperative and thus calls for a greater understanding of quality, reliability, productivity and sustainability to create a brighter and greener future for the global humanity".

The love for quality at an affordable cost has all along been the motto of agro-industrial society that focuses on conformance of quality based on well defined systems of quality assurance including benchmarking of quality standards. The concept of quality over the years has itself undergone a major change as we entered into the era of globalization and liberalization of the economies of the world. It allowed production in one country, with materials, components and sub-assemblies from various countries integrated into the design and production. Productivity on the other hand focuses on the efficacy of the production systems, capabilities and innovativeness of its people and effectiveness of its management. Sustainability demands a great commitment to preservation of natural resources while meeting the increasing demands of both production as well as consumption in the world of expanding horizons of marketing and businesses. Collaboration and integration has become the way of life for producing world quality merchandise for marketing around the world. The quality assurance revolution was greatly facilitated by ISO 9000 series of global quality assurance systems that helped the development of SOPs to facilitate common quality conformance cutting across national boundaries. Today we need to take along with our quest for quality, productivity and sustainability to serve the interest of production and profit but also people and the planet.

New Imperatives of the New Age:

The quality and production systems worked well till recent times of 21st century but the increased understanding of the nexus of quality, productivity and sustainability required that the quest of quality to be necessarily integrated with safety, reliability and sustainability. Increased automation and accelerated growth of technology innovations have created new compulsions of shrinking product life cycle and technology obsolescence while at the same time demanding producing quality products at an affordable cost with production systems complying with the calls of energy conservation, Zero Defect Engineering and also Net Zero Emissions. Teamwork cutting across specialties, negating boundaries of continents and involving innovative and inspired minds from around the world for collaborative design and integrated manufacturing required robust supply chain management and quality assurance at all levels of supply chain management. In addition, we need an added focus on quality of services including delivery, installation and quality of service for maintenance. Further, together with quality assurance at all levels of supply chain, todays production systems require sustained focus on energy conservation, effective waste management and total cost management.

The Age of AI - New opportunities and Challenges for Productivity Management:

The age of Artificial Intelligence has arrived, and we all have already taken a deep plunge into adaptation of AI in all our work and professional endeavors. This has brought great opportunities and created a level play field for all nations of the world where talent pool of inspired minds of people can harness the power of AI and make great headway for growth and development. However, AI has brought new challenges alongside infinite opportunities to innovate and achieve more from less and with increasing focus on recycle, reuse and remanufacturing under the newer production and marketing systems. These challenges shall be more pronounced as we shift to a new era of sustainable development based on

circular economy of tomorrow that shall open opportunities for translating waste into wealth and making the Vedic proclamation "Everything Goes Back to Where It Came From" come true. This will open new grounds for zero waste manufacturing alongside with responsible consumption and utilization of goods and services by people around the globe.

The quest for quality and increased productivity in the age of AI need to be thus necessarily integrated with sustainability and care and concern for people and planet Mother Earth. We need to reimagine newer systems of design and production conforming to the requirements of quality, reliability and sustainability, assuring increased productivity on one hand and Zero Waste and Zero Emission production systems, on the other.

The Way Forward:

Realizing the full potential of AI for quality assurance, increased productivity and sustainability requires a concerted effort from researchers, businesses, policymakers, and individuals along the following pathways:

i. Investment in Research: Continued investment in AI research is needed to develop more efficient, robust, and ethical AI systems. Further, increased investment in pathbreaking scientific advancement and game changing technology innovations akin to making circular economy work is needed.

ii. Developing Standards and Regulations: Clear standards and regulations are needed to ensure the responsible development and deployment of AI. In addition, new standards for waste management, reclamation of precious metals, recycle and reuse of waste are to be put in place.

iii. Promoting Collaboration: Collaboration between researchers, businesses, and policymakers is essential to address the challenges and maximize the benefits of AI for enhanced quality, increased productivity and sustainability.

iv. Education and Training: Educating and training the workforce on how to use and interact with AI systems is crucial for successful AI adoption for increased productivity and sustainability.

v. Ethics and Professional Moral Codes for use of AI: Tomorrow's AI applications and system on chips should incorporate ethics and professional moral codes as an integral part of AI software and hardware that shall prevent misuse of AI and assure quality and reliability of systems and services.

In summation, the quest for quality and increased productivity is to be integrated with the quest for sustainability. The age of AI presents both opportunities and challenges for productivity and sustainability. By embracing a holistic approach that considers the ethical, environmental, and social implications of AI, we can harness the power of AI to create a future where quality of life is enhanced, productivity is enhanced, resources are used sustainably, and the planet is protected for future generations. The quest for quality, productivity and sustainability in the age of AI is not just a technological endeavor; it is a societal imperative and thus calls for a greater understanding of quality, reliability, productivity and sustainability to create a brighter and greener future for global humanity.

Productivity in the power-loom industry

Dr. M S Mathivanan
Chairman, SSM Group of Institutions

Indian textile industry is one of the largest industries in the country. It supplies clothing, home furnishings and other products to the big population in India; at the same time, it exports fabrics to many countries.

The textile industry is constituted by the spinning of yarn, weaving of fabrics, processing of fabrics and garmenting and home furnishing of the fabrics. The yarn has to be woven to make it a fabric that is used in many areas, mainly for human consumption, home, furnishing, industrial uses, and also in agriculture. Weaving is a prominent sector in Textiles done in handlooms and power looms.

The Power Loom was one of the most significant inventions of the early industrial revolution. It brought about a radical transformation in the textile industry, eventually leading to the establishment of cotton mills and large-scale textile factories.

Power loom marked a major shift from traditional cottage industries to large-scale factory production with increasing efficiency and productivity and broader market reach.

The power loom is operated on the principle of automation and mechanical power. It comprises a series of integrated mechanism that replaces the need for specially trained operators to manually examine the fabrics.

The first power loom was introduced in the late 18th century with British technology used in English textile mills and consisted of several key components. Fabric is made of a group of warp and weft yarn. The warp is the set of yarns held under tension on a beam that is attached to the loom. The weft is the crossway yarn and is inserted through the warp, pushed by a shuttle or other mechanisms. The loom is operated by a series of mechanical devices and power sources such as belts, pulleys, and gears, which control the movement of the warp and weft threads.

Yarn is rolled in a pirn and inserted in a shuttle which is travelling between the warp yarn either by hand or by machine. If it is done by hand, it is called handloom and if it is done by machine, it is called power loom.

The production of the fabrics will be very scarce if done by handloom. When it is produced by a power loom, then the production will be higher. In the plain power loom, the shuttle has to be changed whenever the pirn with yarn is empty, the automatic power loom shuttle is inserted automatically without stopping the loom by a mechanism. In this case, production will be higher.

Higher productivity can be achieved in all types of looms - handlooms, plain power looms, shuttle automatic loom, and shuttle-less automatic looms. In all these machines production capacity differs and productivity as well.

Achieving higher productivity in power looms is based on many aspects. For example, the larger yield of production is based on the following bearings in the power-loom industry.

- Skilled manpower
- Maintenance of the loom
- Working conditions of the loom
- Modernized technology
- Supply of power
- Supply and quality of the yarn

- Working capital

All the above have to be met to achieve higher productivity in power loom. If everything is available, except the raw material, production will be stopped. Likewise, even if all the criteria are fulfilled and the supply of power is not regular, then productivity cannot be achieved in the loom.

Out of all the sectors in the textile industry, prominent and important is the power loom as it drastically increases the speed of production. The change from manual labor to power-operated labor enables factories to produce fabrics at a high rate.

Fabrics produced in the power loom by one person will require many more people to produce the same fabrics in hand looms.

The volume of production is very much required for countries like India to feed its large population. It is impossible for hand-operated looms to produce large quantities of fabrics to feed the entire population.

Even though the power-loom industry produces more fabrics, the volume of production is low based on its productivity. This is low-rate of productivity is the result of non-compliance of requirements. Productivity in India is less than 50% of its installed capacity. If efforts are taken to improve facilities such as the supply of power, skilled manpower, quality of yarn, and maintain good working conditions of the looms there are good possibilities of increasing the production many times without even installing an extra loom.

How to Improve Productivity in Power Looms?

The productivity of the loom is governed by the speed, efficiency, and quality of the yarn during the weaving process. Lower productivity not only reduces production, but also affects fabric quality.

In woven fabric manufacturing, warp ends are sized in the warping process by using starch making it possible for them to survive the various stresses encountered in the weaving process. The main object of the sizing is to improve the weaving ability of the warp and make it sustainable for weaving. The breakage rate of the cotton-sized warp yarn is susceptible to humidity and shows large differences with changes in relative humidity in the weaving industry. It is challenging to find the optimum relative humidity level to get minimum warp yarn breakage. A study was done to analyze the effect of relative humidity to warp, and breakage in weaving and to optimize relative humidity with minimum warp yarn breakage rate.

The reduction of breakages of both warp and weft yarn not only increases the production and quality of the warping, sizing, and weaving process but also reduces wastage of yarn. This reduces the overall cost of the fabrics manufactured and improves the profitability of the fabric and that of the company. The efficiency of weaving is the most important factor considered in terms of productivity. The loom efficiency is mainly decided by the speed as well as the downtime of the machine. The efficiency of the loom can be improved by effective control of the breakages of the warp and weft, the mechanical condition of the machine, and poor quality of the atmosphere conditions in the weaving shed were identified as the main reasons for the breakages during the weaving process.

Ways and Means to Improve Productivity in the Power-loom Industry

Yarn Breakages Should be Controlled

Thousands of yarn are inserted in the warp beam and one single yarn is traveling to both sides to make the fabrics. The quality of the yarn should be good so that breakage will be reduced. When the yarn is broken, the loom will stop and production will be affected. These breakages are essential to be reduced by controlling the manufacturing process and

atmospheric conditions at every stage of manufacturing of the fabrics in the weaving industry. One of the most important and considerable problems is the breakages of both warp and weft. Breakages not only reduce the production rate but also deteriorate the quality of the fabric. The quality of the yarn is mainly determined by the CSP (Count Strength Product) of the yarn. CSP of the yarn count should be good so that breakage will be reduced.

Introduce Modern Technology

Usage of computerized systems and automation technology to improve the speed and production in the weaving process.

Modern machines can be programmed to view complex designs, switch patterns quickly, and monitor various parameters to ensure high-quality fabric production. They are commonly used in large-scale textile manufacturing where they are employed to examine a wide range of fabrics, including cotton, synthetic fabrics, and bulks.

These looms can handle high production volumes and are capable of producing fabrics of varying patterns, textures, and widths. The continued use and improvement of power looms enabled textile manufacturers to meet the demand of the global market by producing fabrics in bulk quantities.

In India, there are around 2.5 million looms producing fabrics out of which modernized looms account for less than 10 percent, and the rest are plain power looms which do not produce as efficiently. Even in the plain Power-loom sector, a semi-automatic system can be introduced and production can be made higher and at the same time with good quality. There are some schemes announced by the government to convert the plain power looms into semi-automatic power looms.

Production of the modernized looms facilities is very low in India. Many looms are imported from countries like China, Belgium, Italy, and Germany. If the production facilities of modern machines are made in India, there are good possibilities of converting the plain power looms into modernized power looms.

Quality of Raw Material

The right quality, the right quantity and at the right time is very much necessary for the weaving process. CSP of the yarn is the main criterion of yarn quality. It is a measure of yarn's strength. The product of the yarn count and its strength is known as Count Strength Product (CSP). The commercial value of the cotton variety is related to its spinning performance, which is dependent on the yarn count that can be spun with the given cotton and the CSP obtained for the count. If the CSP is low, the quality of yarn is not good and many breaks will happen. While purchasing the yarn from the spinning mills, the weaver should verify the CSP. The tensile strength of the yarn is also important and influences productivity.

Working Conditions of the Factories

The working conditions in the power-loom factories are often harsh and challenging with little regard for workers' welfare. Factory owners, prioritizing, maximizing production and profits, lead to unsafe and exploitative conditions for the workers. Long working hours prevail in the power-loom industry. Weavers work for 12 hours a day and six days a week. The demanding nature of the work took a toll on their physical and mental well-being. Safety regulations are virtually non-existence, resulting in accidents, working conditions, and environment are becoming increasingly complex and pose significant risks. Accidents and injuries are frequent and workers face the constant threat of getting caught in moving parts of suffering, burns, cuts, or falls. Child labor is another issue in the power-loom industry in India.

Take Advantage of the Government Schemes

Utilize government support by taking advantage of the schemes rolled out. The Government offers financial assistance, technical support, labor training, and market linkages to weavers.

Uninterrupted Power Supply

Apart from the yarn, power is the main input in the power waving. In India, power interruption is becoming a normal practice. Many factories install diesel generators to produce power when electricity is not available. Productivity is affected when the power is cut. The cost of the fabric is also increased when the weaving is enabled by using diesel generator.

When the loom is stopped, it also affects the quality of the fabrics produced.

Conclusion

Weaving is largely operated in many countries like China, India, Taiwan, Pakistan, Indonesia, Vietnam, Taiwan, Turkey, Germany, Italy, France, USA, and more. China and India are the most prominent countries that produce fabrics extensively - for domestic consumption for their huge population and also export to many countries.

Next to agriculture, the power-loom industry is the prominent industry in India and it provides the country with more employment, more production, and more foreign exchange earnings through export. The power-loom industry in India contributes greatly to the social and economic stability of the country. Value addition in products made by the power-loom industry is very much necessary for the economic development of India. Productivity is the key area in adding value to the products and also adding value to its operation. By improving the yield of production, the industry will certainly grow very much economically at the same time it will contribute to the financial development of the factory, and of course of the country as a whole.

Summary of WAPS 8th knowledge sharing forum

Sunil Abrol
Vice President , WAPS

WAPS' 8th Knowledge Sharing Forum (KSF) event was held on September 12, 2024 on the theme " AI at crossroads: Public and private sector innovations for productivity ".

Following were the speakers on the panel:

1. Mr. Om Prakash Subbarao, CEO, CORE labs, IISc, India
2. Mr. Peter Watkins, COO, QA Consultants, Canada
3. Mr. Ben Lynch, CTO, Adtones , UK

Dr. Carolyn Watters, Fellow of WAPS and Professor of Computer Science , Dalhousie University , Canada, was moderator for the session.

The event began with a message from Mr. Chen Shenchang, President, WAPS.
Key recommendations and observations of the panelists were as follows:

Om Prakash Subbarao:
- AI needs to be used responsibly
- Responsibility begins with design and development leading to deployment.
- Need to build ethics, transparency and accountability in the entire life cycle.
- Indian Govt has focus on AI for Health sector with a view to democratize Health Care.
- AI is rapidly evolving and offers challenges and opportunities.
- Data source and authenticity of data are crucial to AI.
- Govt. needs to Govern and support AI initiatives while private sector should innovate.
- Create systems, concept management framework, Digital lockers and exchanges.

Peter Watkins:
- AI for software Quality Assurance and Testing.
- Genius Project aims to use AI for improving productivity in Software Development.
- Project involving 11 countries and 50 partners from industry, academia and consultants to be launched by end 2025.
- Projects aims at 20% improvement in software development.
- Project aims at 3x improvement in software testing.
- AI software solutions are impacting industry.

Ben Lynch :
- We need to manage AI Hype.
- Companies need to assess whether they are ready for AI intervention.
- Companies go wrong in using AI and selection of tool.
- Companies need to prepare internally.
- One needs to be careful about cost and investment.
- Need to choose right product at right time.
- Need to identify right data and team to identify source of data.
- AI is an art and not science.
- AI is not always best solution

Carolyn Watters facilitated discussion by asking questions to the panelists.

Summary of WAPS 9th knowledge sharing forum

Sunil Abrol
Vice President, WAPS

WAPS 9th Knowledge Sharing Forum (KSF) was held on December 5, 2024 on the theme "Diversity in Productivity: Inclusive diversity_ managing diverse teams to optimize productivity ".

Following were the panelists:

1. Dr Angela Y. Lee , Professor of Marketing , Kellogg School, of Management, Northweatem University, USA.
2. Mr. Rajesh Varma, Founder, Varma Gastion, France
3. Mrs. Flora Mutahi , CEO, Melvin Marshal Intl. Ltd., Kenya

The session was moderated by Mr. Leon Bian , KSF Coordinator and a Fellow of WAPS.

The session began with an AI generated message from Mr. Chen Shengchang , President, WAPS, who highlighted the vision, mission and activities of WAPS and importance of AI.

Following were the key observations and recommendations:

Angela Y Lee :

- Diversity means having different elements like education, age, gender, culture, color etc.
- Diverse people bring different ideas and perspective therefor need for collaboration.
- Research shows that there is steep rise in collaborative research, work and publications across Globe.
- While similarity attracts, diversity increases productivity.
- Diversity leads to social integration and cohesiveness leading to growth, focus and creativity.

Rajesh Varma :

- Diversity works as good business strategy
- Transparency , diversity, gender equality lead to better leadership as seen in organization in East and West .
- Deloitte research shows that diverse organisations are more productive.
- It is good to invest in companies that have high diversity.
- Taiwan has high diversity as women have hunger for hard work.
- Indian IT companies demonstrate innovation because of diverse manpower.
- Low diversity may contribute to higher employee turnover.
- Leaders focus on quality and adopt diversity as they grow.

Flora Mutahi

- Africa is diverse with multi ethnic , skills, gender etc.
- Kenya has 36% women on Boards.
- Initiative on women in manufacturing.
- MSME hiring more women.
- Govt. pushing diversity.
- Access to funding a challenge for women.
- Women in Africa have challenge for access to education, STEM, networks .
- Gender bias needs to be managed.
- Women are more collaborative and empathetic leading to higher productivity.

Leon Bian led the discussion. Few more points were made:

- Societal culture impacts diversity.
- Need to see diversity within cultures.
- East has collaborative culture while west is individualistic.
- East has collectivity and hierarchical culture leading to dependence.
- West has autonomous culture leading to creativity.

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WORLD CONFEDERATION OF PRODUCTIVITY SCIENCE

WAPS
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International Journal of Productivity Science (IJPS)

A WAPS Publication

The International Journal of Productivity Science (IJPS) is a quarterly WAPS Publication focuses on SEE (Social, Environmental and Economic) Productivity. It is a platform for productivity researchers and practitioners to share their views and foster discussion.

Guidelines for Authors:

1. Paper submitted is required to be related to Productivity in any sector or area of operation (Social, Environmental, Economic).
2. Paper submitted should be in the English language.
3. Paper should be original writing bases on authentic events, data, case studies, facts, etc.
4. Paper length should be between 2,500-3,000 words, abstract should be between 250-300 words.
5. Contents of the paper should be annotated.
6. Author should give appropriate acknowledgment and references to recoginze sources of information, data, etc.
7. Manuscript should be in double space, typed in Times New Roman font, with font size 12, or Arial, font size 11, in MS Word file.
8. There should be a separate page for Title, Name of Author(s), Institutional Affiliation, email ID, etc.
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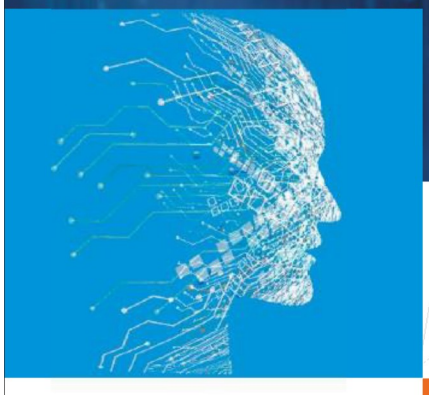

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  - AI in Power, Coal, Steel and Cement Sectors
- **AI Advancements in Manufacturing and Services**
  - MSMEs, Process Industries, Auto, Defense, IT and Telecom
  - Logistics and Supply Chain Optimization
- **AI in Fintech**
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  - Financial Forecasting, Business Intelligence, Client Transparency
- **AI for Net Zero Emissions**
  - Green Energy, Productive Agriculture and Zero-Defect Engineering
- **AI and Cybersecurity**
  - Cyber Defense and AI's Role in Securing Digital Ecosystems
- **Policy and Regulation for Responsible AI**
  - Frameworks for AI Governance in Government and Public Sectors
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  - A look at how the future of AI in health care might unfold
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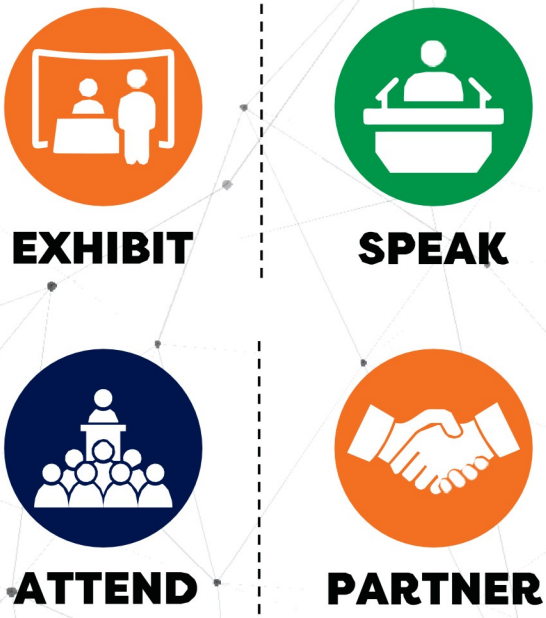

Be part of the AI revolution shaping the future of productivity.

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