

QUALITY

For Sustainable Future

Property Investment
for
Economic Prosperity in Sri Lanka

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Catalysts for Effective
Six Sigma

Pg.18 **Implementation**

State-Owned
Enterprise
RESTRUCTURING
in SRI LANKA

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ISSN 2989-0918



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Department of Industrial Quality Management
Faculty of Built Environment & Spatial Sciences
General Sir John Kotelawala Defence University



In the contemporary green economic paradigm, success is evaluated not solely on technological advancements or profits but also on the caliber of life enhancements it delivers and its favourable influence on the environment.

**AI Generated Image*

*"Quality is not an act,
it is a habit."*

Aristotle


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General Sir John Kotelawala Defence University
Volume 02, ISSUE I | JANUARY 2024



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EDITOR'S NOTE



Dr. S D Jayasooriya

Welcome to the second issue of "QUALITY" magazine, proudly brought to you by the Department of Industrial Quality Management of General Sir John Kotelawala Defence University. As we delve into the pages of this edition, we continue our exploration of the theme "For Sustainable Future." The commitment to sustainability is not just a goal; it is a journey that requires constant dedication, innovation, and collaboration.

Meanwhile, quality tools and techniques are indispensable for organizations aiming to thrive in the competitive and dynamic present-day business environment. They provide a systematic and data-driven approach to quality management, enabling businesses to adapt, grow, and meet the evolving needs of their customers and stakeholders. Further, tapping into the expertise of industry professionals is a strategic move for organizations aiming to ensure and enhance the quality of their products, services, and operations. The guidance of experts can lead to informed decision-making, improved processes, and a competitive advantage in the ever-evolving business landscape. Therefore, the necessity of educating the community about quality tools and techniques, coupled with the insights of industry experts, goes beyond the success of businesses. It has far-reaching effects on the economic, social, and environmental aspects of the community, contributing to its overall prosperity and sustainability.

In this issue, we are excited to share a variety of articles, features, and interviews showcasing our efforts to build a sustainable future through quality practices. From cutting-edge insights to inspiring stories, each piece reflects our commitment to both quality and sustainability. Explore thought-provoking articles covering new quality tools, technologies, and their positive impact on communities. Our contributors, including renowned professionals and industry experts, bring diverse perspectives, creating a rich tapestry of ideas and solutions throughout the magazine.

As we navigate the complexities of today's world, it is crucial to emphasize the importance of collaboration. This magazine is a testament to the collective efforts of the different parties in the community. I take this moment to extend my heartiest gratitude to all the contributors, readers, and editorial board who have played a role in making this issue possible. Finally, I invite you to engage with the content, share your thoughts, and join us on this journey with quality towards a sustainable future. Together, we can make a difference.

Thank you for your ongoing support and enjoy your reading!

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General Sir John Kotelawala Defence University

ABOUT KDU

General Sir John Kotelawala Defence University (KDU) was initially established as General Sir John Kotelawala Defence Academy by the Parliamentary Act No. 68 of 1981. The Academy was elevated to university status by the Sir John Kotelawala Defence Academy (Amendment) Act No. 27 of 1988, and it was renamed as General Sir John Kotelawala Defence University on 11 October 2007. Degrees awarded by the University are recognized by the University Grants Commission (UGC) in Sri Lanka, and the University is also a member of the Association of Commonwealth Universities (United Kingdom) and the International Association of Universities (IAU).

The University is situated in Ratmalana on a 48-acre plot of land that was formerly the residence of the late General Sir John Kotelawala, Sri Lanka's third prime minister. This stunning estate is enhanced by a magnificent lake, its natural surroundings, and a variety of rare and unusual species of fauna and flora that have been meticulously maintained to preserve the antiquity of the premises.

Throughout its 41-year history, KDU has made every effort to meet the needs of the services, producing more than 3500 graduates for the Tri-services of Sri Lanka. This is because the university's primary objective is to produce highly qualified graduates for the Tri-services in Sri Lanka. Additionally, KDU has improved the overall quality of higher education for Service personnel as a result of its association with other regional military training institutes, which has also boosted the number of graduates it produces each year.

KDU has just started offering degree programmes for Day Scholars on a fee-levying basis, giving many deserving young people in Sri Lanka the chance to pursue a university education of the highest quality. By doing this, KDU aims to create a learning atmosphere where both Day-Scholars and Officer Cadets can benefit. Whereas Day-Scholars are given the chance to learn in a disciplined atmosphere and establish themselves as highly acceptable in modern society. Together with Officer Cadets, Day Scholars have the chance to participate in extracurricular activities including athletics, club activities, field study programmes, etc., giving them the chance to hone their leadership and soft skills and gain a competitive edge in the job market.

With the opening of KDU degree programmes for Day-Scholars in 2010, KDU also commenced attracting foreign students for its degree programmes from SAARC and other friendly countries on fee-levying basis. It has currently enrolled nearly two hundred and sixty foreign students in its degree programmes and the increase in numbers is an indication of the recognition KDU has earned internationally for its degree programmes. Further, this venture has enabled KDU to contribute to the national economy by earning a considerable amount of foreign exchange through its high quality degree programmes in all disciplines.

KDU VISION

To be a university nationally and internationally known for its unique ability to engage both undergraduate and graduate students in distinctive and interdisciplinary defence related higher education that best serves the tri-services, the state sector and society at large.

KDU MISSION

To ensure a high-quality, learner-centered educational experience through undergraduate, graduate, and professional programmes along with high quality research across many disciplines in the field of defence, in both residential and non-residential settings in the campus.

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**General Sir John Kotelawala
Defence University**

- For the Motherland Forever -

MESSAGE from the Vice Chancellor



**Rear Admiral HGU Dammika Kumara, VSV, USP, psc,
MMaritimePol, BSc (DS)**

I am delighted to extend my warmest greetings on this occasion of launching the second volume of "QUALITY - For Sustainable Future" magazine. This noteworthy initiative, spearheaded by the Department of Industrial Quality Management, the Faculty of Built Environment and Spatial Sciences at General Sir John Kotelawala Defence University (KDU) Southern Campus, reflects the dedication and commitment to advancing knowledge in the field. The Department of Industrial Quality Management has consistently demonstrated its prowess in imparting knowledge and skills that empower our students to navigate the complex challenges of the modern world.

I believe that the second volume of the QUALITY magazine stands as a testament to the continuous efforts in promoting quality practices and fostering a sustainable future. The invaluable contributions from esteemed industrial practitioners, renowned academics, diligent researchers, and other esteemed contributors have undoubtedly enriched the content and significance of this publication. Our commitment to quality extends beyond the confines of our university. It is a shared responsibility that involves collaboration with industry partners, policymakers, and the broader community. Through initiatives like this magazine, we reinforce our dedication to bridging the gap between academia and industry, ensuring that our graduates are not only academically proficient but also equipped to make meaningful contributions to society.

As the vice chancellor, I extend my heartfelt appreciation to the editorial team, faculty members, and everyone who has worked tirelessly to bring this magazine to fruition. Your dedication to excellence is truly commendable, and I am confident that this publication will inspire and ignite further passion for quality education and sustainable practices. Finally, I wish, may this issue also serve as a source of inspiration and knowledge for all its readers, furthering the mission of the KDU. I look forward to witnessing the continued success and impact of "Quality - For Sustainable Future" magazine in the community.



IQPM

The Institute of Quality & Productivity Management



Mr. Linton Fernando
President, IQPM

Vision

To be the strongest professional association practitioners and academics the field of quality and productivity management with a capacity to play an advisory role to the government.

Mission

Create an environment to develop professionalism in the public and private sectors to enhance their quality and productivity management.

Starting from 1974 IQPM, which is a founder member of the Organization of Professional Associations (OPA), continues a successful journey in the field of quality and productivity and now is geared to meet any challenge in assisting anyone who needs to enhance their outputs. IQPM can leap forward but we derive our strength to do so from our membership. We need you to create a strong membership base and be with us to grow with us.

As a student member, you can benefit from our training programmes to be a professional in quality and productivity management once you complete a certified training course you are entitled to be an ordinary or associate member depending on your qualifications. When you are enrolled as an ordinary or associate member you will have ample opportunities for professional development even if you belong to a discipline other than quality or productivity management. IQPM will provide a platform for you to gather knowledge, share your experience and interact with quality professionals to broaden your scope of activities. Ultimately you will gain recognition as a professional who will be sought after by the industry for advice and consultation. With that recognition, you will be entitled to be a fellow member of IQPM.

Corporate membership is open to public or private sector organizations that are engaged in the fields of quality or productivity. They will be the driving force within the Institute and will share the responsibility of providing advice and recommendations on quality and productivity to the relevant authorities through the Institute in the best interest of the nation. Thus, they will have much more to give than to take as a responsible corporate organization interested in national welfare.

IQPM has carried out several training programmes, lecture programmes and workshops in keeping with our mission. Many programmes, developed internationally to promote quality and productivity in the industry have not yet come into focus in Sri Lanka. We are planning to introduce such programmes for the benefit of the local industry. IQPM will also be initiating interactive programmes with the industry to address their issues on quality and productivity. Even if you are not a member of the Institute we shall create a platform for you to air your views and grievances and bring them to the attention of the relevant parties.

IQPM,

- Wishes to be of assistance to any corporate agency to improve and make effective use of their quality management systems.
- Intends to work with the cooperation of public and private sector organizations.
- Invites those companies and institutions interested in promoting quality and productivity development to join the IQPM as Corporate members.
- Cordially request individuals also can join as members and enjoy the benefits.
- Likes to work with resource personnel to organize and conduct programs to the industry in the relevant subject areas.

More information and membership application could be obtained through www.iqpm.net



Property Investment

for

Economic PROSPERITY in Sri Lanka



**A conversation with Property Expert,
Prof. Upulee Perera**

Department of Estate Management and Valuation
University of Sri Jayawardenepura - Sri Lanka

Q1

To begin with, please tell us about yourself.

I am Upuli Perera, professor in real estate management and valuation, affiliated with the Department of Estate Management and Valuation, University of Sri Jayawardenepura. Currently, I also serve as the Director of the Centre for Real Estate Studies at the same university. Nearly 20 years of my academic career, I have been working in the areas related to real estate finance and investment in terms of teaching, research and consultancy. This is in addition to my other areas of teaching and research interests which include land management, housing, real estate markets, DCF method of valuation and social value in real property. I earned my Ph.D. in Urban and Regional Studies from the University of Birmingham, funded by the Commonwealth Scholarships UK. I hold a Master's degree in Urban Engineering from the University of Tokyo, Japan. My Bachelor of Science (Special) degree in Estate Management and Valuation is from the same university where I currently work as an academic.

Q2

How can the idea of Property Investment be explained?

In simple form, property investment is about acquiring real estate with the expectation of generating returns through renting or resale. It has this dual benefit of regular income from rents and long-term income from capital appreciation which can be realised at the time of sale. Investors choose properties, whether residential, commercial, agricultural, developed/raw land, or otherwise, based on their potential for the highest rate of return given the level of risk. Property investments can also take various forms, including direct ownership, Real Estate Investment Trusts (REITs), or crowdfunding, nevertheless not all these methods are available or equally popular in Sri Lanka. Direct ownership entails a conventional mode of purchasing specific properties, such as residences or commercial spaces, and renting/leasing them out and/or selling them in future with the expectation of capital appreciation. On the other hand, REITs allow individual investors to partially own and operate investments collectively, offering a higher proportion of dividends and quality properties. Crowdfunding, a rising trend, involves a group of investors pooling resources to invest in a property.

Q3

How property investment helps economic growth?

Property investment, I would say, is an investment in one of the production factors—the investment in the land factor. Therefore, it certainly has a multiplier effect on economic growth, prosperity, and the quality of life of a community. It demands labor in construction, valuation, architecture, engineering, and a range of other real estate services, thereby creating jobs. Property investment also adds the property stock,

including roads, utilities, and public facilities, which falls under the broad sphere of property investment. These elements provide infrastructure on which other economic development activities can lean on. Property ownership, transactions, and occupation are subject to taxes; thus, property investment can certainly contribute to government revenue, which can then be utilized for the provision of public services and infrastructure development. Property investment is also a means of wealth creation that boosts consumer spending. As property values appreciate over time, property owners accumulate wealth. This wealth can lead to increased consumer spending, benefiting various sectors of the economy. It is widely acknowledged that a significant proportion of the world's wealthiest individuals have accumulated their wealth through strategic investments in property. Properties can act as collateral, people who own houses or land may leverage their equity for other investments or discretionary spending. So, property investment can stimulate financial markets. Mortgage markets, real estate investment trusts (REITs), and various financial instruments related to real estate provide investment opportunities for individuals and institutions. Property development often incorporates innovative technologies which can contribute to technological advancement of the built environment that we live, work and play. A thriving property market can attract foreign investors, leading to increased foreign direct investment. This influx of capital not only supports the real estate sector but also has spillover effects on the broader economy. Property investments can spur entrepreneurship and support small businesses. Retail spaces, commercial properties, and mixed-use developments create opportunities for entrepreneurs to establish businesses, contributing to local economic vibrancy. All in all, property investment helps economic growth whilst contributing to community development and overall quality of people's life.

“A thriving property market can attract foreign investors, leading to increased foreign direct investment.

This influx of capital NOT ONLY supports the real estate sector but also has spillover effects on the broader economy.”

Q4

How would you elaborate the present status of property investment in Sri Lanka?

The property investment sector has been one of the top priorities of the government over the years. While more than 80% of land in Sri Lanka is owned by the state or held under different state agencies, significant attention has been growing towards releasing them for local and foreign investments. This enthusiasm has further intensified since the economic crisis we experience aftermath of Covid-19. The government is now seeking to monetize potential lands as a way to navigate through the economic challenges. Since these are state lands, the provisions are to facilitate property investment through leasing. Lease periods can go up to a maximum of 99 years, but more recently, policies have confined leasing to 30 years in most cases. Tourism, logistics, mixed developments, housing apartments, agriculture and fishery, administrative, financial, and other services have been the key sectors that were mostly promoted for urban development; thus, the promotion for property investment through RFPs also usually corresponded accordingly. On top of that, we have flagship projects such as Colombo Port City—a master-planned area calling for investments and started their investment promotions.

and actual development, we can observe that some investments committed prior to Covid-19 reached practical completion by the end of 2022 - several mixed development projects and apartment complexes were added to the country's property stock. Some notable agricultural investments have taken place in the rural areas of the country. According to the Central Bank's data, up to the second quarter of the year 2023, foreign direct investment (FDI) records amount to 288.89 USD million, with the property sector being one of the contributors is noteworthy. Measures have been taken to establish SL REITs in 2020 by the Colombo Stock Exchange (CSE) and the Securities Exchange Commission with the extra ordinary gazette notification 2186/29 under the securities and exchange commission of Sri Lanka Act No 36 of 1987. However, this new investment vehicle became pragmatically redundant having no proposal put forward up to now. I consider this very unfortunate. The economic, political and Covid-19 compounded reasons which came into effect with this period didn't set a favorable climate in Sri Lanka to get such new investment vehicles established. Should REITs become successful it would have provided an opportunity for average investors the opportunity to reap the benefits of a real estate investment and the advantages associated with investing in publicly traded securities on the CSE.



Prior to Covid-19, with interest rates in the single digits, there were many investments in developable lands, apartments, and properties related to tourism and leisure. However, this trend discontinued, particularly due to political instability, higher interest rates, a significant rise in the cost of construction, and the depreciation of the rupee against the dollar that we have experienced since the crisis period of 2022. It is evident that much of the private investor confidence in property development was lost in this period. Additionally, restrictive policies on government spending, from the local to national level, from around 2022, largely limited investments from the state sector. Due to the long-term nature of property investment, where there is a considerable time lag between investment commitment

Q5

How can property investment could navigate amidst the economic crisis that Sri Lanka faces?

Through property investment, we can effectively monetize land and building resources in Sri Lanka. There are pockets of brownfield lands in urban locations, including prime places in Colombo city. Here, 'brown lands' are referred to underutilized land pockets in urban areas. Some of these lands may have been encroached or have not come to the market due to various tenure issues. There are also state lands reserved with no development for certain reasons, but these reasons may now be redundant due to changes in urban-technological contexts.

Additionally, there are underutilized built-up spaces where economic returns are not harnessed in an optimum manner. Request for Proposals (RFPs) can be introduced to develop these properties to their highest and best use. For example, the Sri Lanka Ports Authority or Sri Lanka Railways may have lands that can be reassessed for the need to maintain them as reserve land stock or put into effective use through feasibility studies. Spaces in train stations, which are still kept with traditional services, can be redesigned with architectural heritage preserved, and certain spaces can be leased for different complementary services. We can refurbish these with good business plans. Similarly, lands held by state institutions simply as land stock in peri-urban or rural areas can be promoted for agriculture and tourism activities with proper financial and environmental feasibility and private sector partnerships.

'brown lands' are referred to underutilized land pockets in urban areas. Some of these lands may have been encroached or have not come to the market due to various tenure issues.

In this respect, some of the ongoing initiatives already undertaken by various state institutions, including the Urban Development Authority, indicate a positive trend. The government's attention to improving the land administration system and land policy can also be seen as a positive sign. However, what we have focused less is on creating various property investment vehicles that could attract average investors. In this respect, as I said, the redundancy of SL REITs is unfortunate. Conventional property investments, where the aim is to develop lands and buildings, require large investors, and the cohort of such investors can be relatively small. However, new investment vehicles such as real estate tokenization, crowdfunding, and RETIs can attract average investors. These established investment vehicles exist elsewhere, including in Hong Kong, Japan, Singapore, Thailand, and India. These investment vehicles can simply roll out property rights (ownership) in parts that the average person can invest in, whether locally or from abroad. This approach allows us to tap into a larger investor cohort compared to the limited investor cohort in the traditional mode. Therefore, Sri Lanka need to work more strongly and thoroughly starting from our regulatory and technological transformations.





Q6

What key challenges is Sri Lanka facing in its efforts to improve property investment, and on what immediate steps should we focus?

Sri Lanka faces several challenges in its pursuit to enhance property investment, with key obstacles ranging from public awareness to policy unpredictability. One significant impediment is the limited outreach to the public – enhancing the public’s intelligence for property investment. For instance, when SL_REIT regulation was introduced, not many understood what was actually meant by the idea of income generating real estate. One of our recent research findings highlighted that the term income generating real estate in practice was interpreted in a very limited way, perceiving it to be properties that belong to business organisations instead of real estate that generate income from renting or selling. These entangled with various social sentiments people have with respect to land/property and lack of governance experience in our everyday lives, foster skepticism among general public, especially when something new is about to be introduced, particularly in the realm of property investment. Therefore, for us to break from the comfort of traditional investment models remains a challenge.

The frequent changes in policies and regulations add another layer of uncertainty. In Sri Lanka, policies seem to shift abruptly, creating an unfavorable climate for investors. The interest rates suddenly drop into single digits in 2020 or so and arose up to 30% within a time span of 2 years. Similar fluctuations occurred in tax rates, importation policies for building materials, ownership regulations for foreigners, and leasing periods, oscillating between 99 years and later stick to 30 years. While the economic crisis from 2020 may certainly explain some of these policy shifts, but the pattern of sudden regulatory changes has persisted beyond crises, often with the changes in political leadership. In the current crisis, potential stakeholders adopt a cautious “wait-and-see” approach, observing the unfolding scenario before making their move.

Property investment typically involves various approval procedures. In Sri Lanka, these process for preliminary planning clearances, approvals, registrations, etc., experience to be cumbersome and intricate. The lack of governance in these procedures exacerbates these challenging experiences. While initiatives by the Urban Development Authority and the Colombo Municipal Council aim to streamline approval processes and create an investor-friendly environment, the effectiveness of these measures in enhancing overall property investment in the country remains to be seen.



To promote property investment for economic prosperity, it is crucial to understand the dynamics of how property investment works and the competition surrounding it. In this context, competition refers to challenges arising from different asset classes and the competitive landscape among various geographical locations (cities). It’s essential to recognize that property investment is just one among several asset classes; equity stocks, bonds, precious metals, foreign currencies and so on, in which an investor can allocate funds. Also, property investors have the option to invest globally, considering deregulated markets like Dubai and many other cities worldwide that facilitate easy access to property investment, often with enhanced infrastructure. To attract both foreign and local investors, it’s imperative to acknowledge that investors both local and foreign therefore have choices, thus, we need to have our own competitive edge. Moreover, traditional property investment is inherently large and long-term. Investors committing to an investment today typically wait for two to three years to realize returns. In a country with a track record of frequent policy changes, an investor-friendly climate may be compromised. Similarly, providing only short-term lease periods narrows the scope of property investment the country can attract. While extending leases might be a common practice, in theory, it may not favor large investors.

In the realm of property investment, the unlocking of economic potential is not simply about transactions; it’s a journey towards sustainable growth and prosperity.



Unlearning and Relearning: Catalysts for Effective Six Sigma Implementation



Ms. Nishadi Rajapakse
Secretary, IQPM

Introduction

In today's extremely competitive business environment, achieving operational excellence is crucial for organizations aiming to optimize processes, reduce costs, and provide outstanding products or services. Within the array of available methodologies, Six Sigma stands out as a powerful approach dedicated to reducing defects and enhancing quality throughout operational workflows. This systematic and data-driven strategy places a strong emphasis on continuous improvement, ultimately fostering superior performance and raising customer satisfaction to unprecedented heights.

The core tenets of Six Sigma, emphasizing data-driven decision-making and quality improvement, require more than just incorporating new practices. They necessitate leaving the outdated methodologies and the acquisition of adaptive strategies through a process of unlearning and relearning. This article explores the pivotal role of unlearning and relearning within the Six Sigma framework, elucidating their significant influence on organizational success.

Understanding Six Sigma

At its essence, Six Sigma adheres to the DMAIC methodology—Define, Measure, Analyze, Improve, and Control. This systematic approach empowers organizations to pinpoint problem areas, gather and assess data, enact improvements, and uphold enhanced processes over time.



Define:

Commencing with well-defined project goals, a clear scope, and an understanding of customer requirements is essential. A succinct problem statement sets the foundation for a focused and efficient approach.

Measure:

Identifying and quantifying key metrics and performance indicators provides a quantitative assessment of current processes, establishing a benchmark for improvement initiatives.

Analyze:

Utilizing tools such as Cause-and-Effect diagrams, Pareto charts, and statistical methods, data undergoes thorough analysis to unearth the root causes of issues or variations within processes.

Improve:

Building upon a comprehensive analysis, innovative solutions are devised and implemented. Rigorous testing and validation ensure these solutions effectively address identified issues.

Control:

Instituting control mechanisms to monitor and sustain improved process performance is crucial, ensuring consistency and preventing regression.

The Role of Six Sigma in Business

- 1. Quality Enhancement:** Six Sigma places paramount importance on improving quality. By meticulously analyzing processes, identifying root causes of defects, and implementing data-driven solutions, organizations can significantly reduce errors, enhance product or service quality, and subsequently elevate customer satisfaction.
- 2. Cost Efficiency:** The methodology's focus on streamlining processes and minimizing variations leads to cost efficiencies. Through waste reduction, optimized resource utilization, and fewer defects, organizations can achieve substantial cost savings, thereby improving their bottom line.
- 3. Evidence-Based Decision Making:** Central to Six Sigma is its reliance on data and statistical analysis. This data-driven approach empowers organizations to make informed decisions based on evidence rather than intuition, fostering a culture of continuous improvement and strategic decision-making.
- 4. Customer-Centric Philosophy:** Business excellence is inherently tied to meeting and surpassing customer expectations. Six Sigma's customer-centric philosophy ensures that processes are aligned with customer needs, resulting in products or services that more closely align with market demands.
- 5. Cultural Transformation:** Implementing Six Sigma necessitates a cultural shift within an organization. The methodology encourages a mindset of continuous improvement, teamwork, and accountability, fostering a culture where employees are engaged in driving efficiency and innovation.

Implementation Challenges and Best Practices

While the advantages of Six Sigma are significant, adopting this methodology comes with its own set of challenges. Resistance to change, insufficient leadership commitment, inadequate training, and challenges in data collection and analysis are commonly encountered hurdles. Nevertheless, organizations can alleviate these challenges through robust leadership support, comprehensive training programs, transparent communication, and the establishment of measurable goals aligned with business objectives.

Significance of Six Sigma

Numerous well-known companies have experienced notable success through the implementation of Six Sigma. General Electric, guided by Jack Welch's leadership, applied Six Sigma to achieve substantial enhancements across various operational domains, leading to savings amounting to billions of dollars. Likewise, enterprises such as Motorola, Toyota, and Amazon have harnessed Six Sigma principles to attain outstanding business excellence, underscoring its adaptability across a wide array of industries.

In the intensely competitive realm of modern business, attaining excellence is not merely a choice but a vital necessity. Six Sigma serves as a robust methodology, providing a structured approach to instigate continuous improvement, elevate quality, and optimize processes. Through the adoption of its principles and methodologies, organizations can not only achieve operational excellence but also cultivate a culture of innovation, efficiency, and customer satisfaction. This, in turn, propels them towards sustainable success in a continually evolving market.

Unlearning: Liberating from Traditional Constraints

Shifting Paradigms: Traditional vs. Agile Management

Overcoming ingrained traditional management methodologies poses a substantial challenge for organizations. Transitioning from hierarchical structures to agile frameworks involves unlearning the rigid top-down decision-making process and embracing collaborative, cross-functional teams. For example, a manufacturing firm accustomed to top-down decision-making might break away from this hierarchical approach and embrace cross-functional teams, applying Six Sigma principles. This shift facilitates quicker problem-solving and optimal utilization of diverse skill sets.

Moving from a sequential production process to a lean manufacturing approach necessitates analysis of Value Stream Mapping (VSM). VSM enables organizations to visualize the entire production process, identifying areas for improvement and waste reduction, facilitating the unlearning process.

Research suggests that resistance to change often arises from deeply embedded historical paradigms within organizations. Unlearning entails breaking free from these paradigms, questioning their validity, and fostering a culture open to change. Studies from Stanford University's Graduate School of Business indicate that organizations actively engaged in unlearning historical practices demonstrate greater adaptability in implementing Six Sigma methodologies. These organizations exhibit higher levels of innovation, respond more swiftly to evolving market dynamics compared to counterparts entrenched in traditional methodologies, and are more likely to adapt to technological advancements.





Shifting Perspectives: Embracing Growth over Fixed Mindsets

Unlearning fixed mindsets that resist change is pivotal for the successful adoption of Six Sigma. This transformation involves challenging the notion that processes cannot be improved and embracing a growth mindset that encourages continuous improvement. For example, in a financial institution, employees may need to unlearn the belief that certain long-standing procedures are impervious to improvement. Relearning involves cultivating a growth mindset, motivating them to explore innovative solutions and apply Six Sigma methodologies to enhance efficiency in financial analysis or risk assessment.

The use of Statistical Process Control (SPC) tools, such as control charts, proves beneficial in recognizing and addressing confirmation bias. These tools visualize process variation, enabling organizations to make data-driven decisions while minimizing the impact of biases.

Research in behavioral psychology underscores how cognitive biases, particularly confirmation bias, impede the unlearning process. Organizations must address these biases to objectively reassess existing practices. A comprehensive study published in the Journal of Organizational Behavior highlighted that organizations providing structured cognitive bias recognition training experienced more successful unlearning. These organizations demonstrated improved adaptability in adopting Six Sigma methodologies, attributing their success to a culture of unbiased analysis and decision-making.

Dismantling Silos: Prioritizing Collaboration over Isolation

Unlearning departmental silos and promoting collaboration across divisions are imperative for the successful implementation of Six Sigma. Organizations need to shift from isolated departmental objectives to a unified goal of process improvement.

For example, a healthcare facility dedicated to enhancing patient care might unlearn siloed approaches by integrating departments, such as nursing, pharmacy, and administration, to collectively implement Six Sigma methodologies. This collaborative effort ensures a holistic approach to patient satisfaction and healthcare delivery.



Relearning: Embracing Adaptive Approaches

Data-Driven Decision Making: Prioritizing Insights over Assumptions

Relearning involves mastering the art of data-driven decision-making, a fundamental principle of Six Sigma. Organizations need to transition from making decisions based on assumptions to leveraging actionable insights derived from data analysis. For example, an e-commerce platform relearns by incorporating predictive analytics through Six Sigma principles to enhance the customer experience. By analyzing customer data, they discern patterns and preferences, optimizing their website layout and product recommendations.

The implementation of Design of Experiments (DOE) enables organizations to conduct controlled experiments, systematically varying process parameters to identify optimal settings. This statistical technique helps understand process behavior and optimize factors contributing to quality improvement.

Consistent research findings advocate for data-driven decision-making as a cornerstone of successful Six Sigma implementation. Organizations adept at utilizing data analytics outperform competitors in quality metrics and operational efficiency. A meta-analysis published in the International Journal of Production Economics revealed a strong positive correlation between organizations adopting data-driven decision-making frameworks and their Six Sigma success rate. This underscores the significance of relearning statistical tools and methodologies within the Six Sigma paradigm.

Innovation and Adaptability: Embracing Flexibility in Change

Relearning also entails cultivating innovation and adaptability, necessitating a shift from rigid adherence to existing processes to a culture that encourages experimentation and embraces change. For example, an automotive manufacturer may relearn by fostering innovation in its assembly line processes using Six Sigma methodologies. By empowering employees to suggest and implement process improvements, they achieve greater efficiency and quality control.

Integrating Six Sigma with digital technologies like Robotic Process Automation (RPA) enhances process efficiency. RPA automates repetitive tasks, allowing teams to focus on value-adding activities and accelerating the pace of process improvements.

Research exploring innovation within Six Sigma emphasizes the need for relearning to foster a culture of innovation. Agile methodologies and cross-functional collaboration emerge as critical factors in this process. Studies conducted by the MIT Sloan School of Management revealed that organizations integrating agile principles into Six Sigma frameworks experienced higher rates of innovation. This convergence of methodologies enabled a culture of adaptability, rapid experimentation, and effective problem-solving, propelling these organizations towards sustained excellence.



Unlearning and Relearning in Six Sigma Implementation

Change Management and Leadership Influence

Effectively implementing Six Sigma requires adept change management strategies, with leadership playing a pivotal role in guiding the unlearning and relearning process by setting the tone and direction for the organization. For example, leadership can spearhead the unlearning process by initiating workshops that challenge old methodologies and encourage relearning through practical exercises. This may involve simulations demonstrating the benefits of Six Sigma implementation or mentoring programs for transitioning teams.

Deploying e-learning modules that simulate real-world scenarios helps employees grasp technical nuances. These modules can include simulations of statistical tools and software interfaces, enabling hands-on practice and skill development.

Research on change management strategies indicates that effective leadership significantly influences the unlearning and relearning process. Leaders championing a culture of continuous improvement foster organizational adaptability. A comprehensive survey conducted by the London Business School emphasized that leadership commitment to unlearning and relearning initiatives significantly impacts successful Six Sigma implementations. Leaders who actively participated in these initiatives and communicated the importance of adaptation saw higher employee engagement and smoother transitions, resulting in more effective Six Sigma adoptions.

Big Data and Predictive Analytics

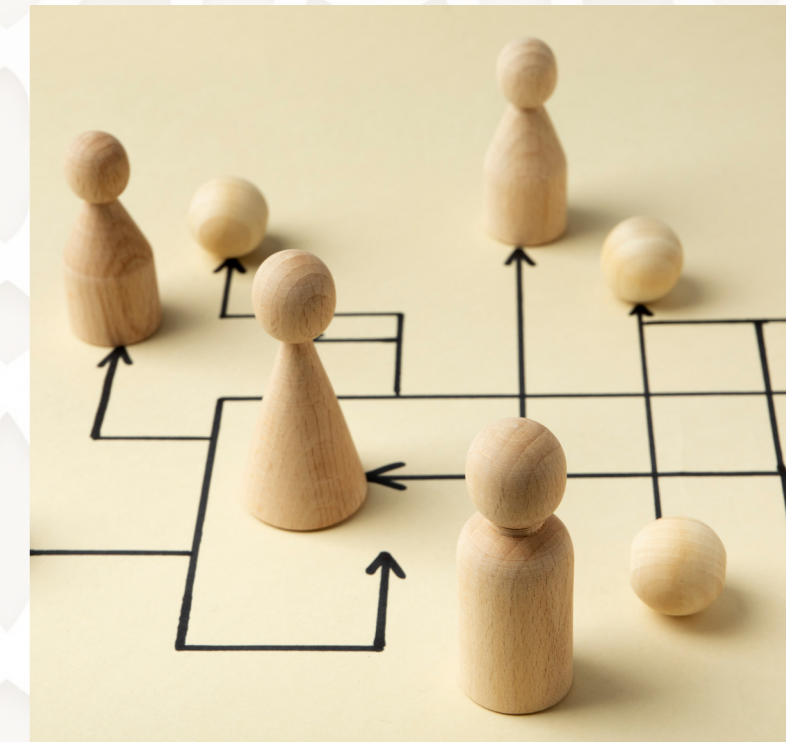
Effective unlearning and relearning involve tapping into the potential of big data and predictive analytics for process optimization. Utilizing advanced predictive analytics algorithms enables organizations to forecast process outcomes, identify potential failure points, and proactively mitigate risks. This technical capability allows for more informed decision-making and preemptive problem-solving.

The integration of big data analytics into Six Sigma methodologies emerges as a transformative strategy. Organizations leveraging predictive modelling exhibit higher accuracy in process forecasting and optimization.

An in-depth case study from the Massachusetts Institute of Technology highlighted the substantial benefits organizations reaped by incorporating predictive analytics into their Six Sigma processes. These organizations witnessed a remarkable reduction in process variability, leading to more consistent quality outcomes and increased operational efficiency.

Employee Engagement: Cultivating Ownership

Fostering engagement and empowering employees are pivotal aspects of the unlearning and relearning journey. Organizations need to establish an environment that promotes participation and recognizes innovative thinking. For example, a telecommunications company may form cross-departmental teams that involve frontline staff in Six Sigma projects. This engagement empowers them to contribute ideas for process improvement, fostering a culture of ownership and continuous learning.



Conclusion

To sum up, the effective application of Six Sigma methodologies requires more than just adopting new tools—it demands the unlearning of outdated practices and the relearning of adaptive strategies. Overcoming traditional mindsets, promoting data-driven decision-making, fostering innovation, and empowering employees are crucial components of this transformative process. Additionally, embracing lean thinking, mastering statistical analysis, integrating technological innovations, and implementing robust change management strategies are fundamental technical aspects of this transformative journey. Research findings emphasize the pivotal role of unlearning and relearning within the Six Sigma framework. Organizations that adeptly navigate the technical intricacies of unlearning and relearning within the Six Sigma framework position themselves for sustained excellence in quality, efficiency, and innovation.

The Ceremonial Launch of Quality Magazine

28th July 2023



The first issue of the industrial magazine on Quality by the Department of Industrial Quality Management was ceremoniously launched on 28th July 2023. The event, graced by the Secretary to the Ministry of Defence, General Kamal Gunarathne (Retd) WWV RWP RSP USP ndc psc MPhil marked a significant milestone in the history of the faculty. The Industrial Quality Magazine is designed to publish quality-related current news, trends in the industry and quality-oriented practices to ensure continuous engagement with the industry by the students and academia. The first issue of the biannual magazine was launched under the theme “Quality - For Sustainable Future”.

PURE CEYLON TEA

as an

Experience

Vision and Innovation of Tea Beyond a Beverage on the Global Stage



The tea culture of Sri Lanka was started back then when the coffee plantations of the country started to wipe out due to a fungal disease. In 1893 British brought a tea plant from China and this was planted in the Royal Botanical Garden, Peradeniya, and this was the first non-commercial teal planting trial ever held in Sri Lanka.

Pioneering the commercial teal planting in Sri Lanka during British colonial rule, specifically in 1867, our beautiful island embarked on a new path as plantations expanded. James Taylor, who is a Scottish gentleman, added charm to the scenic mountains and initiated tea plantations in Loolcondra Estate. For more than 150 years, facing various challenges, the tea plant, known by the botanical name *Camellia sinensis*, has been a valuable asset to the national economy, serving as a direct or indirect source of income for nearly four million Sri Lankans, spreading extensively across 14 districts.

When the country changed its name to Sri Lanka in 1972, its premier industry was faced with a knotty problem. Ceylon was not only the former name of the country; it was also one of the world's leading brands, familiar to consumers from Virginia and Vladivostok. Tea from Sri Lanka would still be marketed as Ceylon Tea under the lion logo; a priceless world brand had been saved.

The Evolution of Ceylon Tea



Mr. Anura Athukorala
Chief Executive Officer
Athukorala Group (Pvt) Ltd



Tea Plantation in Southern Region

Tea cultivation extended beyond the confines of large-scale plantations, reaching even the picturesque village of Pitigala in the southern province. This expansion brought new hope to farmers who had previously focused on rubber cultivation. In 1980s, tea cultivation permeated every village in Pitigala, surpassing rubber cultivation in prominence. During this time, Athukorala Group, renowned for its business network in the region, transitioned from tea cultivation to production. In 1991, the Athukorala Tea Factory was established in the midst of the enchanting tea estate known as Kuruduwatta, situated in Pitigala. Since then, the tea leaves harvested from the tea estates within its business network and those from nearly 2000 smallholders / tea estate owners in the area have been contributing to the low grown pure orthodox tea to the industry. For over three decades, Athukorala Group has supported these smallholders, by providing facilities and services, and bestowed the name "Ceylon Tea" as a beacon to tea production.

Immerse yourself in the warm embrace of Ceylon Tea, where the perfect balance of strength and finesse captivates your taste buds, leaving a lingering, enchanting aftertaste.

Customer Centric High-Quality Tea Production

Recognizing the need for Sri Lankan tea industry to adapt to the evolving global economy and new technology, Athukorala Group transitioned the traditional tea production into customer centric production and marketing systems a decade ago. This strategic move aimed to secure the future of tea production. Apart from traditional orthodox black tea production, Athukorala Group enhanced activities in value-added tea, green tea, and artisanal tea production, with a particular emphasis on tea-related tourism concepts. Adhering to the established norms for regular production, the group integrated modern technology into the tea industry and obtained various international quality certificates such as ISO 22000-2018, GMP, HACCP, HALAL, RA, and CQC. Beyond the conventional tea auctions in the country, Athukorala Group directly exports tea to England, Japan, China, The Czech Republic, and Middle East countries, and actively participate in international tea promotion and exhibition programs, closely monitoring the modernization of the global tea economy, and conducting the production process and marketing accordingly. Acknowledging the steadfast commitment to quality upheld in both the production process and across their estates, coupled with their invaluable contributions to the national tea industry, the group received prestigious national awards consistently every year, an accolade that commenced in 2012 and continued unabated.



The Quality Improvement of Ceylon Tea

The quality improvement of Ceylon Tea involves a multifaceted approach aimed at enhancing every aspect of tea production, from cultivation to processing and packaging. Implementing advanced agricultural practices, such as precision farming and organic cultivation methods, contributes to the cultivation of healthier tea bushes and, subsequently, high-quality tea leaves. Additionally, integrating modern technologies into tea processing facilities ensures a more controlled and standardized production process, minimizing variations in the final product. Rigorous quality control measures, including regular testing for chemical residues and adherence to international quality standards, are imperative to meet the discerning expectations of global consumers. Furthermore, investments in research and development to explore innovative techniques and cultivars, coupled with continuous training for tea producers, play a pivotal role in sustaining and elevating the quality of Ceylon Tea. Through these comprehensive efforts, the Ceylon Tea industry not only preserves its historical legacy but also positions itself as a premium and sustainable choice in the global tea market.



Uncover the secrets of tea blending and brewing, adding a touch of authenticity to your tea tourism escapade in Sri Lanka.



TEA TOURISM SRI LANKA

The tea tourism concept allows the tourist to experience the whole process in the same premises until the clean fresh tea leaves picked from the tea estate undergo the production process in the tea factory and reach a tea pack to the tea center. To offer a comprehensive experience of tea cultivation in a single location, the tea nursery, tea estate, tea factory, local and foreign tea varieties, and the tourist accommodation named *"Kuruduwatta Villa"* have been integrated. This transformation has turned Pitigala village into another tourist destination. To maximize inspiration for both local and foreign tourists, various amenities have been introduced, including water sports in the reservoir, ATVs, passenger cars, various types of bicycles for educational purposes, tennis and badminton courts located in Kurunduwatte estate.

Dedicated staff, including a head chef capable of preparing cuisines from any country in the world, and 360-degree experience showcasing the natural beauty of the entire area, have been brought in to enhance the overall experience. This commitment has significantly increased tourist attraction, making it a class 'A' entertainment hub. Tourists visiting the Athukorala Tea Factory have the opportunity to engage in activities such as planting tea plants, and plucking tea leaves, etc. Ultimately, they can purchase their preferred tea after tasting more than 100 unique and traditional orthodox tea varieties, greatly contributing to the tourism industry. Apart from the scenic tea estate visible to all, visitors can enjoy the wonders of a forest, pluck tea leaves from forestry tea, growing freely in the forest, produce their own tea, and taste a cup from it, filled with colour, strength, brightness and quality. The estate cultivates over 20 varieties of tea, serving as a unique university for those study the distinctive characteristics of the region.

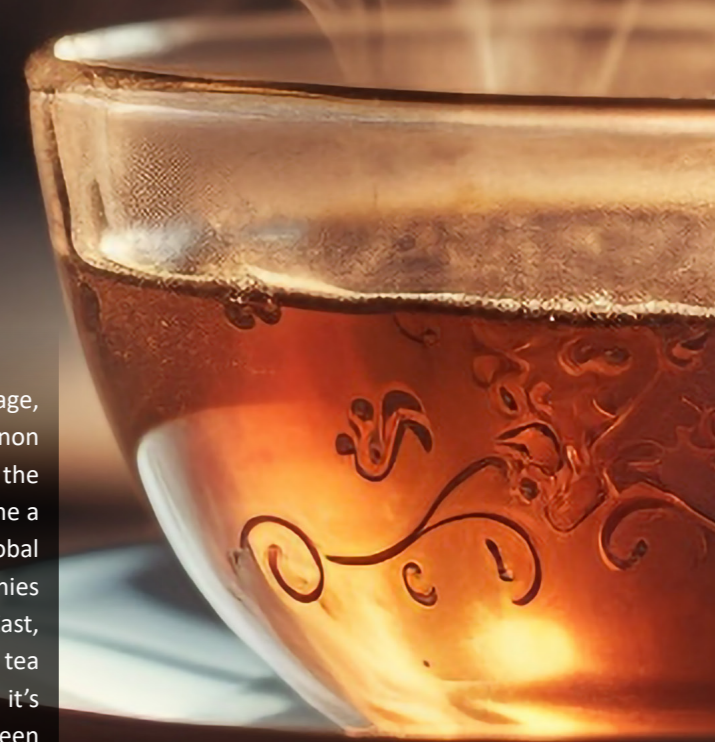
Pouring economic growth into the nation, Sri Lanka's tea industry remains a symbol of resilience, sustainability, and global acclaim.

Suggestions to Uplift the Tea Industry in Sri Lanka

To uplift the tea industry in Sri Lanka, several strategic suggestions can be considered. First and foremost, investment in research and development is crucial. Emphasizing innovative cultivation techniques, sustainable practices, and the development of new tea varieties can enhance both quality and productivity. Collaborative efforts between the government, industry stakeholders, and research institutions can further propel advancements. Additionally, promoting eco-friendly and organic tea production can tap into the growing global demand for sustainable products, enhancing Sri Lanka's reputation as a responsible tea-producing nation. Infrastructure development, particularly in the remote tea-growing regions, is essential to facilitate efficient transportation and minimize post-harvest losses. Furthermore, investing in technology to modernize processing facilities and improve efficiency can elevate the overall competitiveness of Ceylon tea in the global market. Strengthening marketing strategies to highlight the unique qualities of Sri Lankan tea, along with diversifying product offerings, such as specialty teas or blends, can attract a broader consumer base. Lastly, fostering partnerships with international tea associations and participating in global tea events can open up new avenues for export and collaboration, ensuring the sustained growth and prosperity of the Sri Lankan tea industry.

Tea Beyond a Beverage on the Global Stage

Tea has transcended its role as a mere beverage, emerging as a cultural icon and global phenomenon that connects people across continents. Beyond the comforting ritual of sipping a hot cup, tea has become a symbol of tradition, diversity, and wellness on the global stage. Its journey extends from ancient tea ceremonies in Asia to the bustling tea markets of the Middle East, the quaint teahouses of Europe, and the trendy tea boutiques in North America. Tea is not just a drink; it's an expression of cultural identity, a bridge between generations, and a catalyst for social interactions. With a myriad of varieties, from the robust black teas of India to the delicate green teas of Japan, tea showcases the rich tapestry of flavors that reflect the geographical nuances of its cultivation. Moreover, as wellness trends rise, tea is increasingly celebrated for its health benefits, further elevating its status beyond a simple beverage to a lifestyle choice embraced by millions around the world. In cafes, households, and global events, tea has truly transcended borders, making it a global ambassador for shared moments, diverse cultures, and the simple joy found in a cup of carefully brewed leaves.



B.Sc. (Hons) in Property and Investment Management

The Department of Industrial Quality Management of KDU has recently introduced its latest undergraduate degree programme named the B.Sc. (Hons) in Property and Investment Management. This initiative aims to address the existing knowledge gap in the property management field by incorporating elements of investment and financial decision-making within the industry. The program integrates principles from property management, investment analysis, finance, and business management, providing graduates with the knowledge and skills essential for success in the dynamic field of property and investment management. Furthermore, the curriculum was developed in collaboration with both academic experts and industry professionals. It encompasses contemporary subjects that empower students with modern and comprehensive knowledge to excel in the property and investment management sector.

Graduate Profile

Students who have completed the B.Sc. (Hons) in Property and Investment Management will have acquired high level of education including both specialist knowledge and general intellectual and life skills that prepare them for marketable graduate in the field of property and investment management and cover the knowledge, skills, attitudes and mindsets which are required to be a professional in the field of sustainable property and investment management.

The graduate will be able to,

- acquire the knowledge, skills and attitudes in the field of property and investment management.
- apply the knowledge and skills to solve real-world problems in the field of property and investment management.
- adapt to a different environment with a mindset, desirable attitudes and a vision for life and maintaining professionalism.
- maintain lifelong professional development by updating themselves with emerging trends in the field of property and investment management.

Objectives of the Degree Programme

- To produce a competent graduate to face the dynamic challenges in achieving excellence with the ability in the field of Property and Investment Management.
- To produce a marketable graduate with sound competence in the field of Property and Investment management.
- To develop the entrepreneurship sense which influence to be an independent professional in the field of Property and Investment Management.
- To develop all the required skills to address the general issues in the dynamic business environment.
- To provide a sound internship within a highly professional environment to gain experience and achieve excellence in Property and Investment Management.
- To create a graduate as a consultant who with a ability to consult public and private organizations to improve their productivity.
- To contribute to the national economy as being a partner of the sustainable development process in Sri Lanka by improving property and investment fields.

The curriculum of B.Sc. (Hons) in Property and Investment Management

	Subject Code	Subject Name	Core (C)/ Elective (E)	GPA / NGPA	Credits
Semester 01	PIM 1112	Management and Business Environment	C	GPA	2
	PIM 1122	Introduction to Property Management	C	GPA	2
	PIM 1133	Business Mathematics	C	GPA	3
	PIM 1142	Information Technology	C	GPA	2
	PIM 1153	Business and Professional Communication	C	GPA	3
	PIM 1163	Business Economics	C	GPA	3
Semester 02	PIM 1171	Computer-Aided Design (CAD)	C	NGPA	1
	PIM 1213	Accounting	C	GPA	3
	PIM 1223	Business Statistics	C	GPA	3
	PIM 1232	Human Resource Management	C	GPA	2
	PIM 1243	Academic and Professional Writing	C	GPA	3
	PIM 1252	Surveying and Leveling	C	GPA	2
	PIM 1262	Property Valuation	C	GPA	2
Semester 03	PIM 1271	Leadership Skills	C	NGPA	1
	PIM 2113	Property Administration	C	GPA	3
	PIM 2123	Building and Construction Technology	C	GPA	3
	PIM 2132	Banking and Insurance	C	GPA	2
	PIM 2142	Total Quality Management (TQM)	C	GPA	2
	PIM 2153	Enterprise Resource Planning (ERP) for Property Management	C	GPA	3
	PIM 2162	Financial Management and Investment	C	GPA	2
Semester 04	PIM 2171	Personality Development and Grooming	C	NGPA	1
	PIM 2213	Property Investment and Portfolio Management	C	GPA	3
	PIM 2222	Property Finance and Economics	C	GPA	2
	PIM 2232	Property Information Systems	C	GPA	2
	PIM 2243	Operation Research	C	GPA	3
	PIM 2253	Business and Tort Law	C	GPA	3
	PIM 2262	Planning and Building Regulations	C	GPA	2
Semester 05	PIM 2271	Environment, Culture and Society	C	NGPA	1
	PIM 3113	Property Development and Management	C	GPA	3
	PIM 3123	Project Management	C	GPA	3
	PIM 3132	Organizational Behaviour	C	GPA	2
	PIM 3142	Digital Business and Property Marketing	C	GPA	2
	PIM 3153	Property Law	C	GPA	3
	PIM 3162	Strategic Management	E*	GPA	2
06	PIM 3172	Financial Statement Analysis	E*	GPA	2
	PIM 3219	Industrial Training	C	GPA	9
Semester 07	PIM 3226	Industrial Project Report	C	GPA	6
	PIM 4113	Research Methodology	C	GPA	3
	PIM 4122	Real Estate Analytics	C	GPA	2
	PIM 4133	Asset Management	C	GPA	3
	PIM 4143	Property Technology and Artificial Intelligence	C	GPA	3
	PIM 4152	Conveyancing and Notarial Practice	C	GPA	2
	PIM 4162	Creative thinking and Entrepreneurship	E*	GPA	2
08	PIM 4172	Entrepreneurial Finance	E*	GPA	2
	PIM 4216	Dissertation	C	GPA	6
	PIM 4224	Integrated Case Study	C	GPA	4
	PIM 4232	Seminar in Sustainable Property Management	C	GPA	2
	PIM 4243	Intellectual Capital and Property Management	C	GPA	3



STATE-OWNED ENTERPRISE RESTRUCTURING IN SRI LANKA

AN ENDLESS JOURNEY TOWARDS ENSURING A QUALITY LIFE FOR EVERY CITIZEN

Mr. Sunil Hettiarachchi

Deputy Director General - State Owned Enterprise Restructuring Unit

1. First, kindly introduce who you are to our readers. Share a bit about your background, expertise, and your role in the state-owned enterprise restructuring efforts in Sri Lanka.

Firstly, I want to express my sincere gratitude for acknowledging the importance of promoting knowledge about quality practices within our community. I am truly honoured to have been chosen to share my insights in this magazine, and I appreciate this valuable opportunity. If I briefly introduce myself, I am a government officer with nearly 34 years of hands-on leadership and administration experience across various key government bodies in Sri Lanka including divisional, provincial, and national level government institutions. Throughout my career, I've held significant positions, such as Secretary to the Ministry of Highways & Petroleum Resource Development, Secretary to the Ministry of Education, Additional Secretary to the President at the President's Secretariat, Director General of the Department of Pension, Director General of Tourism & Investment Promotion at the Ministry of Economic Development, Controller - Administration & Policy at the Department of Immigration and Emigration, Senior Assistant Secretary to the Ministry of Skill Development & Public Enterprise Reform, and Director of Administration and Finance at the Sri Lanka Institute of Development Administration. Currently, I am serving the government as the Deputy Director General of the State-Owned Enterprise Restructuring Unit, established under the Ministry of Finance, Economic Stabilization, and National Policies. In this role, I provide guidance and consultancy based on my extensive experience in public service to facilitate the effective restructuring of state-owned enterprises.

2. Can you provide an overview of the current state of the Sri Lankan economy and the role of state-owned enterprises within it?

Sure, instead of diving into the current economic situation in Sri Lanka, I believe it's more crucial to begin our discussion by examining the economic structure of the country. While there's a lot of talk about the economic conditions, the focus on the economic framework often takes a backseat. Post-independence, up until around 1972, the Sri Lankan economy heavily relied on plantations, forming a backbone of tea, rubber, and coconut cultivation. However, in 1972, all these plantation holdings were nationalized, and the government strategically invested in key production and service sectors like Air Ceylon, Steel Corporation, prominent Colombo hotels and some other giant production processes. The government emerged as a pivotal investor during that period due to a lack of strong private investors to undertake substantial investments in

crucial large-scale production processes. Even today, the government continues to operate major entities that meet the bulk of market demands for essential goods and services. This includes water supply, electricity, fuel, gasoline, public transport, airline services, healthcare facilities, and free education.

I believe that is the problem of the economic structure of Sri Lanka even prevailing today. Running businesses as mentioned above is not a government task. The role of government should be to create a convenient background or environment for the smooth functioning of businesses to fulfil the needs and wants of citizens. To ensure that, the government has several responsibilities such as the right implementation of law and order to ensure social peace, ensuring national security, policy decision-making, regulations of financial and other institutions, ensuring consumer protection, development of infrastructure, economic development, maintaining good international relationships etc. But in our context, the government must focus on running businesses to provide essential goods and services to the general public instead of being involved in the major role of a government. The current global practice is the small government or hidden government concepts which ensures a convenient environment for the smooth functioning of the economy without any disturbances. In other words, the government play a major role in creating a good atmosphere which not seen by the general public and it's a kind of backstage role. In my opinion, it is okay to do business by the government, if it can operate businesses with the same efficiency and effectiveness as the private sector. However, the problem is that due to the inherent barriers of government sectors, it is very difficult to ensure the high efficiency of commercial-based government organizations. Ultimately, it is clear that there is a problem in the structure of our economy. Indeed, if I explain the role of the state-owned enterprise restructuring unit, providing feasible suggestions to change this economic structure which highly depends on the government sector to improve the overall economic efficiency while enhancing the quality standard of living of the citizens.

“ THE government play a major role in creating a good atmosphere which NOT SEEN by the general public and it's a kind of backstage role.”

3. What motivated the decision to embark on a restructuring journey for state-owned enterprises in Sri Lanka?

The decision to restructure state-owned enterprises (SOEs) was independently made by the government. We have identified 130 SOEs involved in commercial activities such as the production and distribution of goods and services with the expectation of profitability. However, a significant issue arises due to the majority of these SOEs incurring losses, posing a substantial burden on the economy and the annual government budget. This necessitates the allocation of considerable funds to sustain these businesses, leading to financial shortages that impede the government's ability to fulfil its essential responsibilities. Furthermore, the monopolistic conditions of certain SOEs in the supply of goods and services cause consumer dissatisfaction, quality and efficiency issues, and market shortages. This failure to meet citizens' expectations presents challenges to the smooth functioning of the economy. Consequently, restructuring the governance of these entities is deemed essential. I have outlined the motivations behind this restructuring, emphasizing the establishment of government policies to foster a stable economic environment, enhance national productivity, expand the country's production capacity, and create consistent income sources by minimizing inefficiencies in SOEs. Despite the government's involvement in large-scale enterprises like water supply, electricity, gasoline, and fuel supply, these entities do not contribute taxes or funds to the ETF and EPF. This ultimately increases the burden on the government treasury. Additionally, the absence of opportunities for private-sector investors in these state-run businesses necessitates the restructuring of SOEs. In my opinion, the government should refrain from engaging in commercial activities, including education and health services. Instead, the government's role should be to create a conducive environment for private sector engagement in a competitive landscape, while simultaneously regulating all sectors to ensure consumer protection.

During the restructuring process, the main challenge is securing international investors. To achieve this goal, the government has initiated several promotional campaigns targeting international investors. These efforts include advertising in reputable international newspapers and magazines frequently consulted by investors. Furthermore, we have already observed the services of internationally renowned consultants to guide us through the restructuring process. These strategic measures send positive signals to the global investment community, indicating that the country is embarking on a new journey towards sustained growth and is committed to cultivating a favourable investment environment.



4. How have government policies and regulations facilitated the restructuring process of state-owned enterprises in Sri Lanka?

Throughout history, different governments in our country had different strategies for State-Owned Enterprises (SOEs) Restructuring. Some administrations formulated policies asserting that government institutions should curtail their commercial activities, while others sought to amplify government participation. The challenge lay in the absence of a consistent policy framework for this restructuring process. During President Chandrika Kumaratunga's period, the Public Enterprise Reform Commission (PERC) was established, along with the enactment of the Public Enterprise Reform Commission Act No 01 of 1996, to execute the restructuring of government entities. However, it was repealed in 2010. Subsequently, with the appointment of President Ranil Wickramasinghe, there was a renewed emphasis on expediting the restructuring process to reduce the government's burden from commercially oriented SOEs. Consequently, the State-Owned Enterprise Restructuring Unit (SOERU) was established in 2022 under the purview of the Ministry of Finance, Economic Stabilization & National Policies, guided by his vision. The advisory board of SOERU comprises nine members, including eight seasoned experts from prominent business backgrounds and one experienced government official.

To effectively continue this restructuring journey, we got cabinet approval for a State-Owned Enterprises Restructuring Policy in August 2023. Building upon this approved policy, we are currently in the process of formulating a state enterprise law, scheduled for submission to the cabinet for approval in February 2024. These two initiatives collectively establish a comprehensive legal framework. The policy and law serve as guiding principles for a systematic restructuring process. As an example, suppose among the 130 recognized commercial state-owned enterprises, some may face challenges in transferring state ownership. In such cases, an available restructuring option is what involves their operation under a 100% state-owned holding company. In our context, the ownership of the holding company goes to the Ministry of Finance, eliminating governance by ministries or other departments, as is the current practice. Instead, these entities will be overseen by the state's own holding company. The policy and law provide explicit guidelines on the structure of the holding company, subject to ongoing improvements and aligned with widely recognized international practices, such as those observed in Temasek Holdings (owned by the Singapore government) and Kazan Holdings (of Malaysia). The enacted law establishes procedures for electing boards for each state-owned enterprise operating under the holding company, facilitating the selection of qualified experts, and minimizing undue interference and biased behaviours.

This enables independent operation under the guidance of knowledgeable leaders, adhering to business plans following legal and policy guidelines. Additionally, it mandates transparency through the provision of information to the public, adherence to business and financial plans, and compulsory auditing for all state-owned enterprises, all of which will be closely supervised. In essence, this framework outlines the future governance of state-owned enterprises with efforts of restructuring and it will be a big strength to the country.

“ THE State-Owned Enterprises Restructuring Policy and State-Owned Enterprises Restructuring Law would serve as guiding principles for a systematic RESTRUCTURING PROCESS.”

5. What are the primary challenges encountered during the restructuring of state-owned enterprises in Sri Lanka, and how have these challenges been addressed?

When talking about the challenges, the first challenge we faced was identifying the state-owned enterprises operating commercially. This task was time-consuming as there were no specific criteria in place. Another hurdle was analyzing information about these enterprises due to the absence of a proper data management system. Additionally, the lack of proper financial reports and a substantial amount of pending debt payments to the government posed further challenges. Some businesses also had to adhere to unique regulations based on their nature, such as insurance. The primary goal of government restructuring is to attract investors to these enterprises. Given the current circumstances resulting from the aforementioned challenges, it is evidence that investors will not simply consider these state enterprises to be invested. Therefore, the main challenge lies in preparing these state enterprises for the restructuring journey. Another critical aspect is addressing the concerns of employees who fear job loss and have other agendas. Overcoming all these challenges is crucial. Ultimately, we must find genuine investors to be invested in these SOEs, a task made more challenging by the prevailing economic conditions of the country.



6. How do you envision the reshaping of state-owned enterprises contributing to the overall economic development of Sri Lanka?

Certainly! The answer is straightforward. The ultimate goal of this restructuring process is overall economic development. Whether owned by the government or the private sector, these entities should offer efficient services to the people. Simultaneously, they need to maximize profits to cover their expenses without burdening the government. Additionally, collaborating with the private sector in this restructuring helps expand the tax base. In a well-established economy, direct tax revenue is greater than indirect taxes on goods and services. However, in our context, the indirect tax percentage is very high compared to the direct taxes. Therefore, restructuring allows for an increase in the direct tax base. Moreover, private sector involvement addresses various necessities for economic development, such as creating new employment opportunities, enhancing market competitiveness, providing quality goods and services, ensuring the availability of goods and services, promoting research and development, adopting new technology, fostering innovations, and more. Taking all these aspects into consideration, the restructuring of State-Owned Enterprises (SOEs) will undoubtedly lead to a revolutionary economic development by systematically expanding private sector economic involvement while reducing government intervention.

7. How have public-private partnerships been leveraged in the restructuring of state-owned enterprises in Sri Lanka?

My advice is to avoid confusing these two terms. Public Private Partnership (PPP) is entirely different from government restructuring. In our context, separate units have been established under the Finance Ministry to handle PPP. PPP is a popular concept that evolved from the past when governments collaborated with private-sector organizations to finance, build, and operate large-scale projects like public transportation networks, parks, and convention centres. This collaboration occurred when the government lacked funds or was unwilling to take on the overall risk. The government has various PPP options such as BOT, BOO, BOOT, DBFO, DBFM, etc. Primarily, PPP is mainly used to develop essential infrastructure facilities for the country's economic development. The distinction between PPP and restructuring lies in the fact that PPP involves the government partnering with the private sector to complete large-scale development projects while restructuring focuses on reducing the government's role in commercial activities. Ultimately, both strategies are crucial for economic development.

8. How has the restructuring influenced investor confidence in Sri Lanka's economy? What strategies have been employed to foster a favourable investment climate?

Restructuring is an ongoing and perpetual journey, with no defined endpoint. The distinctive aspect of this transformative process lies in the comprehensive structural advancements explained earlier, encompassing the restructuring policy, legal framework, and the introduction of the holding company concept. As part of this restructuring initiative, the holding company assumes ownership of State-Owned Enterprises (SOEs), enjoying the flexibility to solicit investors, release shares, or allocate shares of SOEs. In contrast to the current practice of navigating through multiple institutions and authorities, this approach streamlines the process for investors, referred to as the single-window investment approach—a globally embraced practice in many developing nations. This not only facilitates a more efficient investment experience but also cultivates favourable investment conditions domestically.

Furthermore, a crucial facet of this endeavour involves the imminent approval of an investment protection law by the government, running parallel to the restructuring process. This legislation aims to safeguard investors by providing them with a platform to pursue legal action in cases of misappropriation, unfair practices and any kind of harassment. In essence, these combined strategies are anticipated to establish a robust foundation for an optimal investment climate within the country, fostering confidence and security for both domestic and international investors.

9. Are there aspects of the Sri Lankan context that make the restructuring of state-owned enterprises distinct from global experiences?

Certainly, the answer to your question lies in the global success stories of restructuring mechanisms, as I previously elaborated. One widely embraced concept is that of state-owned holding companies, which has garnered considerable popularity on a global scale. Typically, the initiation of restructuring processes can be observed in the phases where countries struggle with economic crises. In these instances, governments often find themselves lacking the financial resources necessary to sustain businesses, leading to the exploration of private sector involvement for operational efficiency. While certain government responsibilities cannot be eliminated and required to raise adequate funding, efforts are directed towards reducing government engagement in business through restructuring.

A noteworthy example illustrating the success of this approach is China, where approximately 80% of businesses are state-owned, yet the private sector assumes a pivotal role in their management. This model has played a crucial part in forwarding China to the forefront of the world's strongest economies. The success story of China is not isolated; numerous other nations have also achieved substantial development by embracing and implementing state-owned enterprises restructuring processes.



70. What is the vision for the quality improvement of state-owned enterprises in Sri Lanka post-restructuring?

It's an insightful question. The primary responsibility of the government lies in safeguarding its citizens, ensuring the provision of high-quality goods and services at reasonable prices, and also preventing market disruptions. This necessitates the implementation of a regulatory mechanism overseeing all businesses, transitioning the economy towards a regulated regime. Such a restructuring mechanism guarantees the quality and fairness of goods and services, along with their widespread availability, thereby enhancing the overall quality of citizens' lives. Importantly, this doesn't imply stifling businesses from profit-making; rather, it encourages earning a fair profit by incorporating a reasonable margin over the conversion cost, without resorting to unfair practices. In our country, few regulatory bodies such as the Public Utility Commission of Sri Lanka (PUC SL), which oversees electricity safety, the Telecommunication Regulatory Authority of Sri Lanka (TRCSL), which governs the telecommunications industry, and the Civil Aviation Authority, focusing on aviation safety, play crucial roles. However, a notable concern arises as many regulatory authorities in Sri Lanka predominantly concentrate on safety compliance, neglecting commercial compliance. Addressing this gap is imperative; thus, the question arises whether to enhance existing regulations by incorporating commercial compliances or to introduce new ones, aligning with international best practices, especially where no regulatory authority currently exists.

Recognizing the time-intensive nature of establishing new regulatory bodies, our State-Owned Enterprise Restructuring unit contemplates the creation of commercial regulations. These would primarily focus on regulating prices and fostering healthy competition, incorporating technical considerations. The implementation might involve a common regulator or separate regulators for distinct industries or sectors. Finally, this restructuring strategy represents a paradigm shift, propelling the government into a regulatory regime essential for elevating the quality standards across all sectors of the economy.





KDU IRC 2023 – The 1st Industrial Quality Management Session

The inaugural industrial quality management technical session of the annual International Research Conference at General Sir John Kotelawala Defence University was successfully conducted at the KDU Southern Campus on September 7th and 8th, synergizing with the Faculty of Built Environment and Spatial Sciences forum of KDU IRC 2023. Professor Saman Yapa, hailing from the Department of Decision Science at the University of Sri Jayawardenapura, played a pivotal role by graciously assuming the responsibilities of keynote speaker and technical session chair, contributing significantly to the success of the event. The following research papers, focusing on trending areas in quality management, were presented in the industrial quality management session.



Oral Presentations

Exploring ISO Standardization as a Quality Assurance Mechanism in Sri Lankan Higher Educational Sector
WKD Ramesh, SD Jayasooriya and AH Lakmal

Causes for Non-compliance of Made Black Tea with the Main-Relevant-Grade

MNS Rajapakshe, K Amirthalingam and MD Samarasinghe

Evaluating the Impact of Building Information Modeling on Optimizing Quality Management Process in the Construction Industry

LADCN Wijesinghe, SD Jayasooriya and AGKMWS Atapattu



Application of Lean Six Sigma to the Sri Lankan Construction Industry

UM Samarathne, SD Jayasooriya, MLNH Premarathna and DB Karunaratna

Poster Presentations

The Impact of RIBA Plan of Work on the Quality of Projects in Sri Lankan Construction Industry
RMAR Rathnayake, and SD Jayasooriya

The impact of BIM software application on the quality of the construction project success: Special reference to the post pandemic situation in Sri Lanka

PSA Deemantha, SD Jayasooriya and AH Lakmal





ACQUIRING PROFICIENCY IN LEAN AND SIX SIGMA METHODOLOGIES THROUGH HANDS-ON EXPERIENCE IN A PROJECT-BASED LEARNING ANALYSIS

Project: Reducing Vendor Waiting time for confirmation of trade stalls at the Colombo International Book Fair and achieving the goal of Six Sigma performance.

Priyantha Wickramarathna

Assistant Secretary - IQPM / Former Research Officer - University of Kelaniya

Introduction:

The Colombo International Book Fair is a significant trade exhibition held at BMICH annually. However, the organizers are currently facing a major issue-long waiting times for vendors seeking confirmation of a stall reservation. This long waiting time has resulted in significant vendor dissatisfaction. On average, vendors have to wait for 30 minutes before receiving confirmation for a trade stall. The stall reservation operates through physical registration and follows a first-come, first-served basis on a scheduled day and onwards. The number of stalls available for reservation is limited to 225.

Objective:

The objective in front of this project is to reduce the vendor waiting time before they meet the Event Manager in order to reserve a Stall at the Colombo International Book Fair.

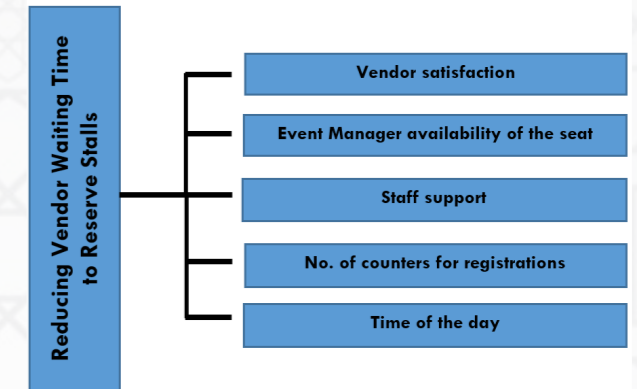
Methodology:

DMAIC, which stands for Define, Measure, Analyze, Improve, and Control, is a structured problem-solving methodology used in Lean and Six Sigma for process improvement and was applied in this study. Under 'Define,' The Team employed Voice of Customer (VOC) / Voice of Business (VOB), CTQ Tree, Project Charter, and High-Level Process Map. In the 'Measure,' the team

utilized the Cause and Effect Diagram and the Data Collection Plan. For the 'Analyze,' the team conducted the Normality test, Regression for continuous variables, and a One-way ANOVA test for discrete variables using Minitab version 19. The population consisted of 91 Vendors. Improvements were implemented through the application of Design of Experiments (DOE), and Control was maintained using the I-MR Chart. The project successfully achieved a significant improvement in the vendor waiting time process from 30 to 8.69 minutes. The key findings include: 71.03% reduction in cycle time: This indicates a substantial decrease in the time it takes to complete the vendor waiting process. Base Sigma of 3.12: This suggests a more stable and predictable process with fewer defects compared to the initial state. Sigma Level of 2.43: This indicates a significant shift towards a more stable and controlled process, with a substantial reduction in variation. These results demonstrate the effectiveness of the project in improving the vendor waiting time process. The reduced cycle time, lower base sigma, and increased sigma level all point towards a more efficient and reliable process.

(1.2) Critical to Quality (CTQ) Tree

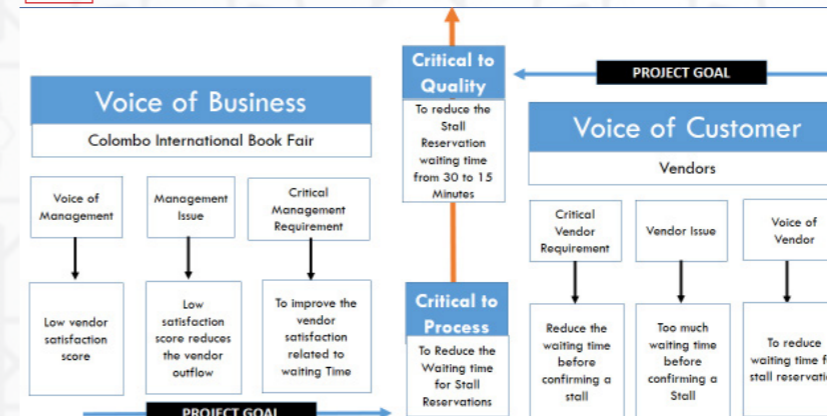
This CTQ tree was used as a structured approach for reducing vendor waiting times and improving the overall quality of the stall reservation process at the Colombo International Book Fair. It helps to identify the critical factors that need attention and guides the improvement efforts.



(Diagram 2 - Critical to Quality (CTQ) Tree)

(01) Define

(1.1) Voice of Customer / Voice of Business



(Diagram 1 - Voice of Customer (VOC) / Voice of Business (VOB))

The first step taken by the Six Sigma team was to understand both the voice of the business and the voice of the customer. Diagram 1 illustrates that the customer represents the vendor, so it is referred to as the 'voice of the vendor.' The primary concern voiced by the vendor was the need to reduce vendor wait times. Vendors were experiencing excessively long wait times before confirming their Trade Stall reservations, and the critical vendor requirement was to reduce this waiting time. This led to the identification of the Critical to Quality (CTQ) parameter, which stated the need to reduce vendor waiting times from 30 minutes to 15 minutes. On the other hand, the voice of the management indicated a low vendor satisfaction score. The management's issue with this low score was that it resulted in a decrease in vendor retention. The critical management requirement was to enhance vendor satisfaction, which was directly tied to the waiting times.

(1.3) Project charter

The team created the project charter, which included the goal statement to reduce vendor waiting time from 30 minutes to 15 minutes by October 29, 2023. The Vice President of the Exhibition Committee served as the Champion, and team members included the Event Manager, Receptionist, Staff from the Registration Desk, and members of the Accounts Dept.

The project commenced on October 20, 2023, with the goal of completion by October 29, 2023. Events Department was in the scope of this project while all other departments, except for the Events Department, were considered out of scope for this project.



Business Case	Scope
Taking long waiting time to confirm a stall to a Vendor for the Colombo International Book Fair, which resulted in substantial Vendor dissatisfaction.	In Scope: Event Department Out Scope: All Other Departments
On average, Vendors have to wait for 30 minutes before receiving the confirmation for a trade stall.	Time Frame
Business Case	
High waiting time during Stall Reservation	
Goal Statement	
To reduce the Stall Reservation waiting time from 30 to 15 Minutes.	
	Team
	Champion – Chairman, Exhibition Committee Mentor – Administration Manager Team Members - Event Manager, Accounts Team Members, and Registration Team Members.

(Diagram 3 - Project Charter)

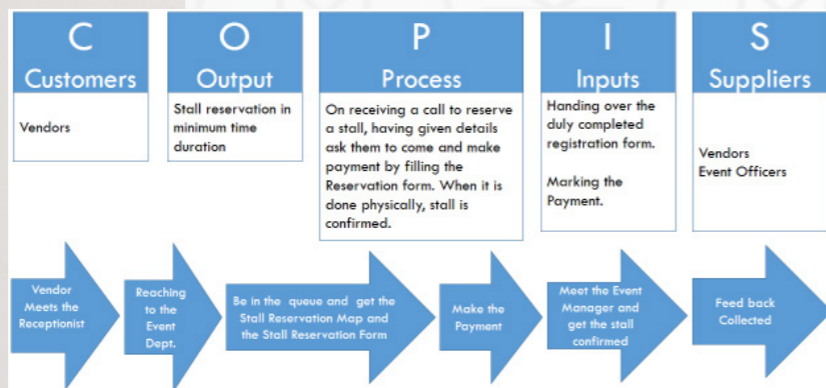
(1.4) High Level Process Map – COPIS

The team created a high-level process map in the form of COPIS. The customer in this process was the vendor, who wanted confirmation of a stall reservation from the Event Manager.

The process began with the vendor walking in and meeting the Receptionist. They would then proceed to the Events section where they awaited and met with the Registration staff. At this point, they received the stall map and the registration form. Subsequently, they waited to make the payment, completed the payment transaction, and filled out the registration form. The duly completed registration form would be handed over to the Event Manager to confirm the stall reservation. The output was the reservation of a stall within the shortest possible time.

The inputs for this process included submitting the duly completed registration form and processing the payment.

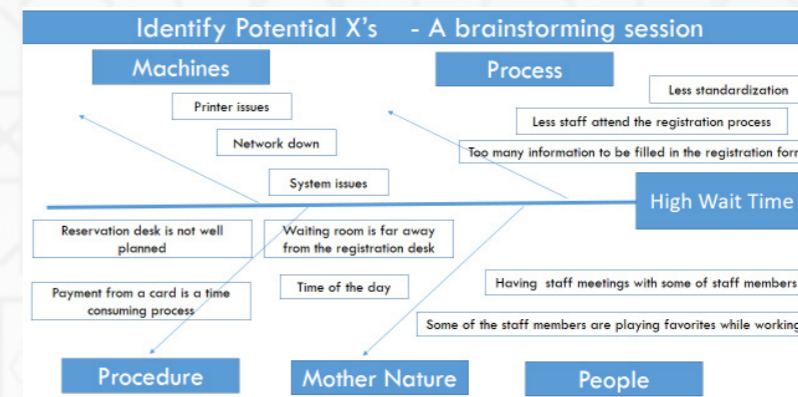
The suppliers for this process were the vendors and Event Officers.



(Diagram 4 - High Level Process Map - COPIS)

(02) Measure

(2.1) Cause and Effect Diagram



(Diagram 5 - Cause and effect diagram)

- The team conducted a cause-and-effect diagram, which was the result of a brainstorming session. This session helped them identify various factors contributing to the high waiting time.
- Under ‘People,’ it was found that some members of the event staff were in meetings during the registration period, while others were playing favorites when serving at the registration desk. These behaviors led to longer registration times and, consequently, significant waiting times.
- Regarding the ‘Process,’ several causes were identified, including the too many details to be filled in the registration form, insufficient staff to handle the registration process, and a lack of standardization.
- Under ‘Machines,’ issues with printers, network outages, and system problems were frequent occurrences, leading to prolonged waiting times.
- ‘Mother Nature’ also played a role, as factors such as the time of the day and the distant location of the waiting room from the registration desk contributed to delays.
- Lastly, under ‘Procedure,’ it was observed that the reservation desk was poorly planned, and payment processing via cards was a time-consuming process. These causes were identified during the brainstorming session.

(2.2) Data Collection Plan

The team created a data collection plan, as shown in Diagram 6. In the project, ‘Waiting time’ (Y) was a continuous variable. ‘Vendor satisfaction score’ (X1) was also continuous. ‘Event Manager Availability’ on the seat’ (X2) is a discrete variable (Yes or No). ‘Supporting Staff’ (whether appropriate or less) is represented by X3, which is also a discrete variable. The ‘Number of Registration Desks, ranging from two to five, is another discrete variable named X4. Finally, ‘Time of the Day’ (Morning Session or Afternoon Session) is again a discrete variable (X5).

	Vendor Waiting Time	Vendor Satisfaction Score	Event Manager Availability	Staff Support	No of Registration Desks	Morning / Afternoon Session
Measure Name (Y or X)	Y	X ₁	X ₂	X ₃	X ₄	X ₅
Data Type (Continues or Discrete)	Continuous	Continuous	Discrete	Discrete	Discrete	Discrete
Who	Chairman/ Exhibition Committee	Black Belt	Chairman/ Exhibition Committee	Chairman/ Exhibition Committee	Chairman/ Exhibition Committee	Chairman/ Exhibition Committee
Sample Size	98 Vendors (98 Companies visited to obtain 225 Trade Stalls)					

(Diagram 6 - Data Collection Plan)

An Excel sheet was used by the data collection team to collect data from Vendors. Therefore, they started picking samples from 8:30 am to 10:50 am and then from 11:00 am to 1:45 pm. The vendors’ process of meeting the receptionist and then the Event Manager for stall confirmation was noted, including the waiting time.

According to Table 01, the first vendor entered the institute at 8:30 a.m. The vendor then met the receptionist and went to the Event Section at 8:32 a.m., which took 2 minutes. Subsequently, the vendor joined the queue to obtain the Stall Reservation Map and the Stall Reservation Form, marked at 8:45 a.m. The vendor proceeded to make the payment by 8:51 a.m. and received trade stall confirmation at 9:10 a.m., completing this activity in 40 minutes. Average time for vendors to meet the Event Manager and reserve a stall is 30 minutes approximately. Similarly, the data collected identifies the waiting times for all 91 vendors, which are shown in Tables 1.

The Vendor Meets the Receptionist	Time taken from meeting the receptionist to reaching the Stall Reservation Section (Minutes)	The vendor reaches the Stall Reservation Section	The time taken to get the Stall Reservation Map and the Registration Form (Minutes)	The vendor is in the queue to get the Stall Reservation Map and the Stall Reservation Form from Registration desk	The time taken to make the payment. (Minutes)	Make the payment for Stall Reservation	The time taken to hand over the duly completed form, along with the payment receipt, for stall confirmation from the Event Manager (Minutes)	Meeting with the Event Manager with a duly completed reservation form and the payment receipt for stall confirmation	Total Waiting Time (Minutes)
MORNING SESSION									
8.30 am	2 Minutes	8.32 am	13 Minutes	8.45 am	6 Minutes	8.51 am	19 Minutes	9.10 am	40 Minutes
8.30 pm	2 Minutes	8.32 am	6 Minutes	8.38 am	2 Minutes	8.40 am	5 Minutes	8.45 am	15 Minutes
MORNING SESSION									
11.00 am	2 Minutes	11.02 am	8 Minutes	11.10 am	4 Minutes	11.14 am	9 Minutes	11.23 am	23 Minutes
11.00 am	2 Minutes	11.02 am	8 Minutes	11.10 am	4 Minutes	11.14 am	12 Minutes	11.26 am	26 Minutes
You may collect all the waiting time as given above									

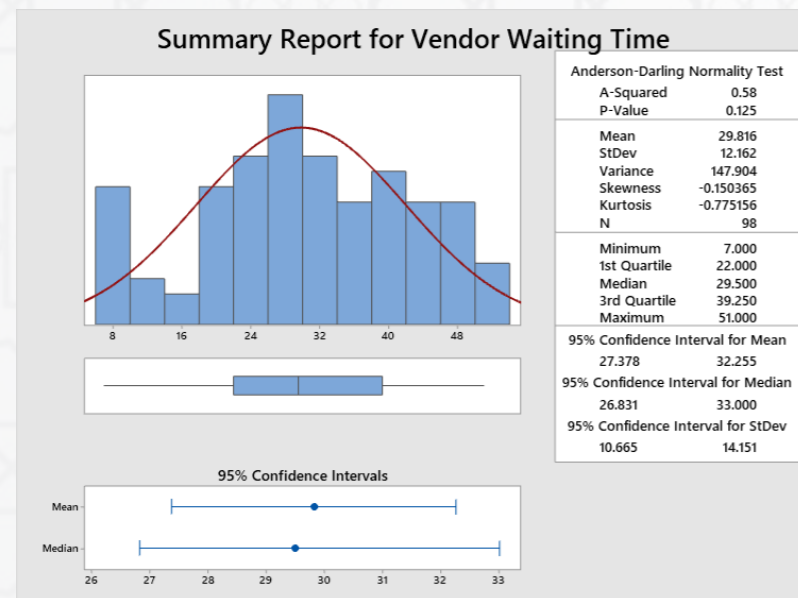
(Table 1 - The waiting process for vendors to meet the receptionist and confirm their stalls with the Event Manager)

[03] Analyze

(3.1) Data Analysis

To analyze all these variables (Xs) with 'Y' through hypothesis testing, the team aimed to determine whether 'Y' is normally distributed or non-normally distributed. Therefore, to check for normality, the team utilized Minitab. In Minitab, the team navigated to the 'Stat' tab, then 'Basic Statistics,' and finally 'Graphical Summary.' Under the tab for variables, the team entered 'Vendor Waiting Time' and clicked OK.

Result: Normality Test - Vendor waiting Time



(Diagram 7 - Summary Report for Vendor Waiting Time (Y) - Normality Test)

To proceed further analysis, the team conducted hypothesis testing with the help of each variable to identify whether these potential X's are significant to project Y or not.

According to Diagram 7, the P-value of 0.125 which is greater than 0.05 indicates that the data is normal, with a mean of 29.816 minutes which is almost 30 minutes. However, examining the standard deviation, which is 12.162, reveals that it is relatively large compared to the mean of 29.816. In this case, the mean waiting time is 29.816 minutes, and the standard deviation is 12.162 minutes. This could be one of the issues. This means that, on average, the waiting times for vendors deviate from the mean by approximately 12.162 minutes. Most of the vendor waiting times are expected to be within about 12.162 minutes above or below the average waiting time of 29.816 minutes. This provides a measure of the variability or spread of waiting times around the mean.

Vendor Satisfaction Score (X₁)

The first variable is Vendor Satisfaction Score (X₁), and the team aimed to determine whether Vendor satisfaction is influenced by vendor waiting time. Both 'Vendor waiting time' and 'satisfaction service score' are continuous variables, so the team conducted a regression analysis. In Minitab, the team navigated to the 'Stat' tab, selected 'Regression,' and chose 'Fitted Line Plot.' Under the response variable 'Y,' I entered Vendor waiting time, and under the predictor variable 'X,' the team entered Vendor Satisfaction Score (X₁) and clicked OK.

If you examine Diagram 8, the adjusted value is 94.9 percent, which is greater than 65%. This suggests that vendor satisfaction is a highly significant contributing factor to vendor waiting time. When vendor waiting time is high, Vendor satisfaction goes down. You can observe that this line has a negative trend. Therefore, it is essential to address this issue to reduce vendor waiting time; otherwise, vendor satisfaction will be impacted.

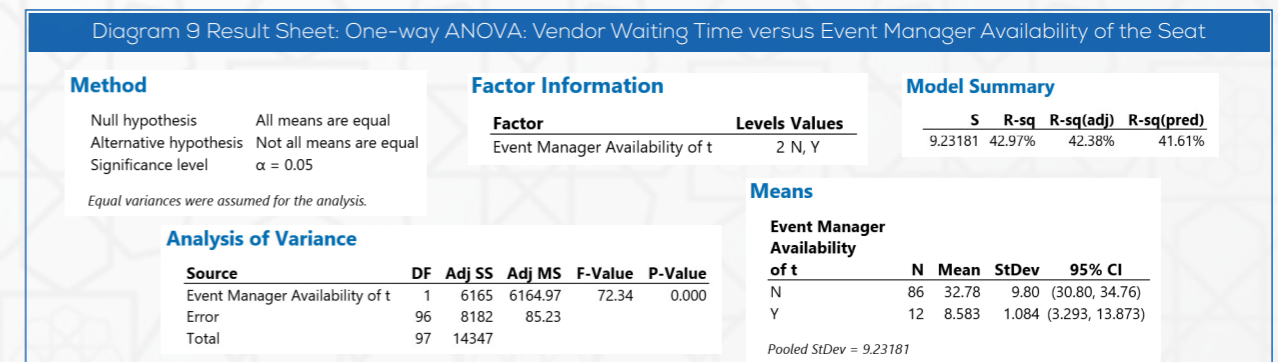


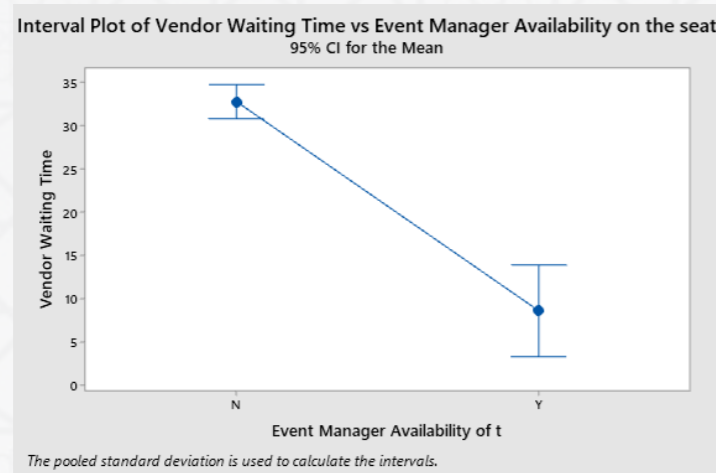
(Diagram 8 - Regression Analysis: Vendor Waiting Time vs Vendor Satisfaction Score)

Event Manager Availability on the Seat (X₂)

The next variable is Event Manager Availability on the Seat (X₂). The project's 'Y' is continuous and follows a normal distribution, while X₂ is discrete with two values (i.e., Yes or No). To analyze this, the team conducted a one-way ANOVA test using Minitab. Navigating to the 'Stat' tab, the team selected 'ANOVA' and chose 'One Way.' For the response variable, the team selected 'Vendor Waiting Time,' and for the factor, the team chose 'Event Manager Availability on the Seat.'

According to Diagram 9 Result Sheet, a P-value of 0.000 suggests that Event Manager Availability on the Seat (X₂) is a significant factor. When the Event Manager is available, the mean Vendor Waiting Time is 31.161, whereas when not available on the seat, the mean increases to 39.700. This indicates that Event Manager Availability (X₂) is indeed a significant variable, underscoring the importance of having the Event Manager on the seat.





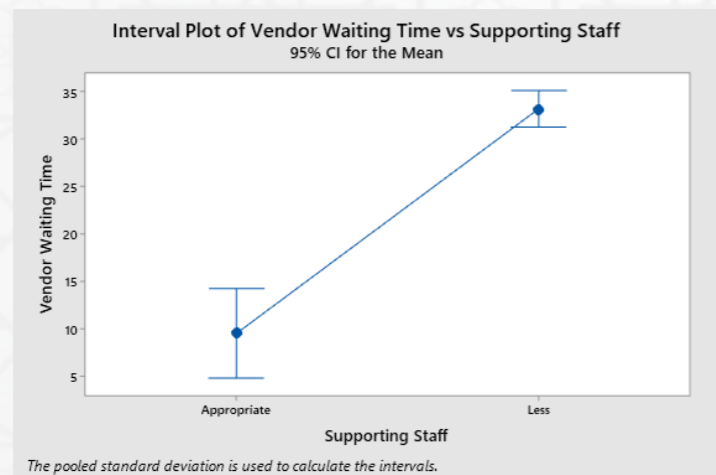
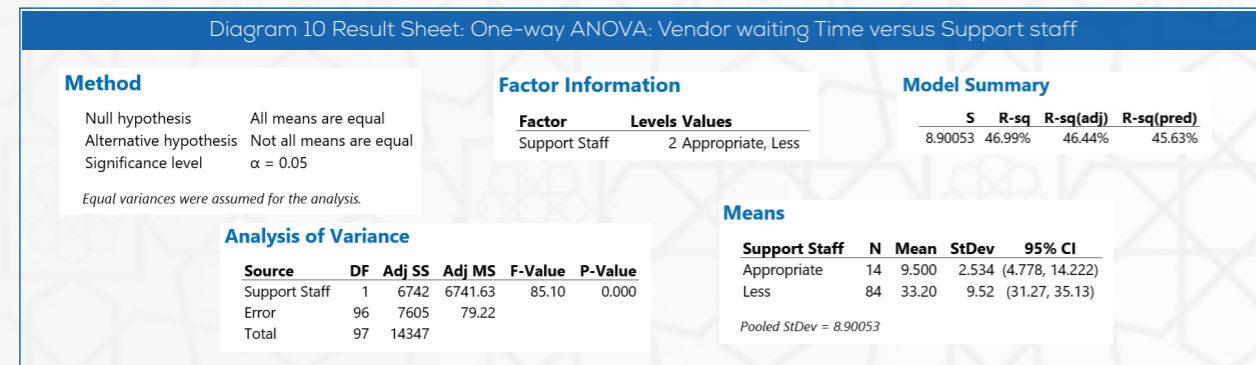
(Diagram 9 - Vendor Waiting Time vs Event Manager Availability of the Seat)

If you look at this graph (Diagram 9), the Vendor Waiting Time is significantly lower at 8.583 compared to when the Event Manager is not available on the seat, resulting in a waiting time of 32.78 which means Event Manager should be available on his seat whenever the Stall Reservation starts.

Supporting Staff (X_3)

The next variable, supporting staff (X_3), is once again a discrete variable with two categories. Therefore, the team conducted a one-way analysis of variance (ANOVA) test. In Minitab, the team navigated to the 'Stat' tab, selected 'ANOVA,' and chose 'One Way.' the team set 'Vendor Waiting Time' as the response variable and 'Support Staff' as the factor.

According to Diagram 10 Result Sheet, a P-value of 0.000 indicates that support staff (X_3) is a significant factor. When appropriate staff is available, the mean Vendor Waiting Time is 9.500, whereas with less staff, the mean increases to 33.20. This suggests that support staff (X_3) is indeed a significant variable, emphasizing the importance of having a sufficient support staff.

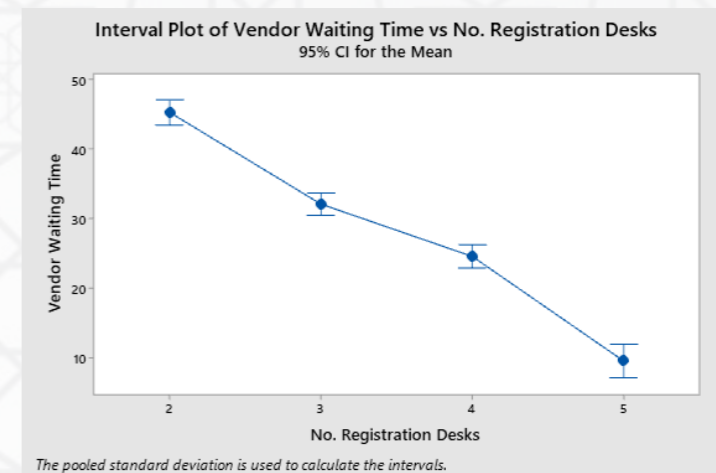
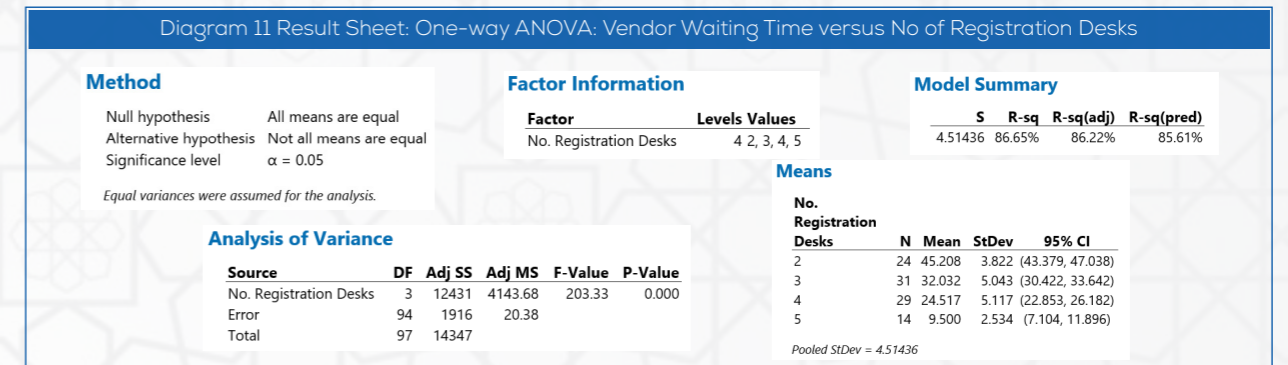


(Diagram 10 - Vendor Waiting Time vs Supporting Staff)

No. of Desks open for Registration (X_4)

The next variable is the number of desks open for registration (X_4). The team navigated to the 'Stat' tab, selected 'ANOVA,' and then 'One Way.' For the response variable, the team utilized 'Vendor Waiting Time,' and for the factor, the team considered the number of desks open for registration.

If you examine the P-value in Diagram 11 Result Sheet, it is 0.00. This result indicates that X_4 is a significant variable. When observing the registration desks which open for registration are 2 to 5. When there are 4 or 5 registration desks, it takes only 24.517 to 9.500 minutes of waiting time before confirming a stall.



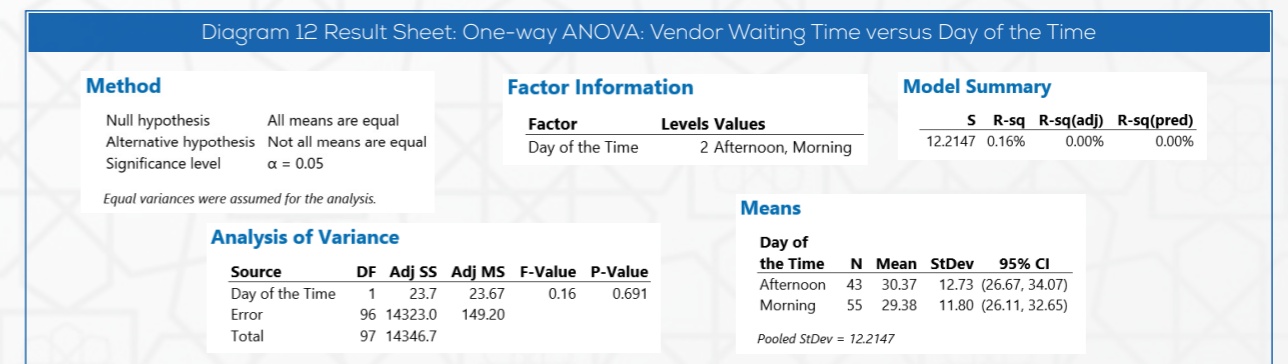
(Diagram 11 - Vendor Waiting Time vs No of Registration Desks)

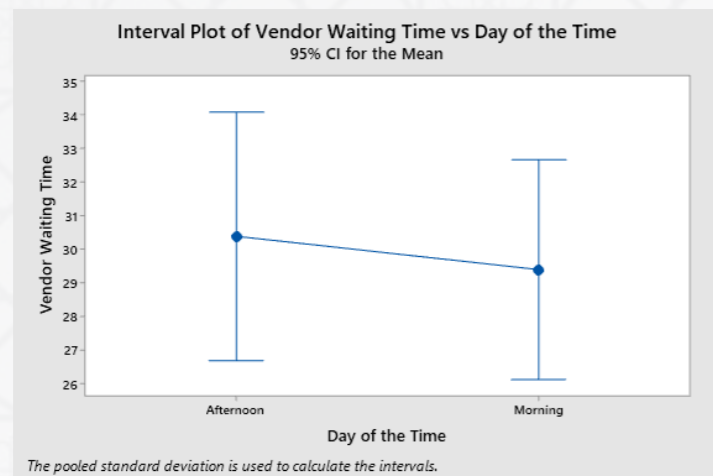
The Time of the Day (X_5)

The next variable is the time of the day (X_5). In Minitab, the team navigated to 'Stat,' 'ANOVA,' and 'One Way.' Under factors, and the team changed this value to the time of the day.

According to the Diagram 12 Result Sheet, the P-value obtained is greater than 0.05, exactly 0.691. This suggests that the time of the day does not significantly impact the project 'Y (Vendor Waiting Time).'

If you examine the waiting times, the Morning session has an average (Mean) of 29.38, and the Afternoon session has an average (Mean) of 30.37. Both fall within the same range, indicating that the time of the day does not have a substantial impact on Vendor waiting time.





(Diagram 12 - Vendor Waiting Time vs Day of the Time)

(3.2) Summary of the analyze phase

If you examine the summary in Table 2, Vendor waiting time is represented as a continuous variable 'y' (dependent variable) while Vendor Satisfaction Score, Event Manager Availability, Supporting Staff, No of Registration Desks, and the Day of the Time (morning or evening) are all denoted as independent variables 'Xs' that were tested. Hypothesis tests were conducted for each, and whether they were considered significant or non-significant.

y	Data Type	X's	Data Type	Hypothesis Test	Result
Vendor Waiting Time	Continuous	Vendor Satisfaction Score	Continuous	R Sq = 94.9 %	Significant
		Availability of Event Manager	Discrete	P= 0.000	Significant
		Staff Support	Discrete	P= 0.000	Significant
		No of Registration Desks	Discrete	P= 0.000	Significant
		Morning / Afternoon Sessions	Discrete	P= 0.691	Not Significant

(Table 2 - Summary of the analyze phase)

(04) Improve

(4.1) Design of Experiment (DOE)

The team moved into the improve phase. Team wanted to conduct a design of experiment (DOE) in which they wanted to see Event Manager Availability, Supporting Staff and No of Registration Desks, all these three together can they impact on the overall vendor waiting time.

To achieve this, a Design of Experiment (DOE) was conducted, considering three factors: Event Manager Availability, Sufficiency of Supporting Staff, and the Number of Registration Desks. The objective was to identify the minimum Vendor waiting time condition.

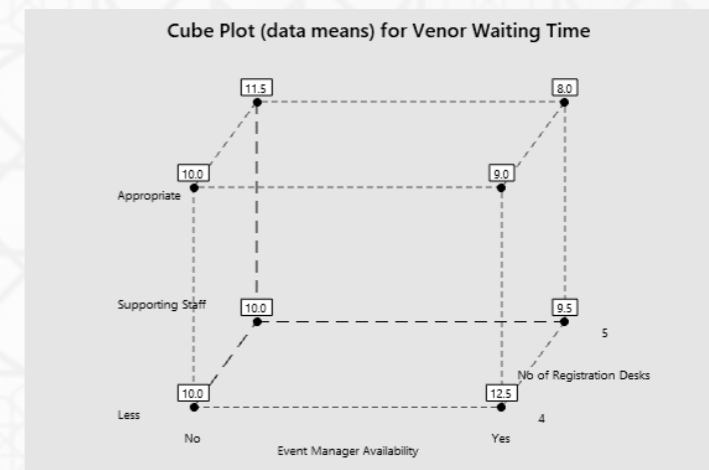
In Minitab, the team navigated to the 'Stat' tab and the 'DOE' tab, selected 'Factorial,' and clicked on the 'Create Factorial Design' tab. The number of factors is set at 3. And then moved to the 'Design' tab, and the team selected 'Full Factorial,' and inserted the number of replicas as 2, and clicked 'OK.' Subsequently, the team revisited the 'Factor' section. Within this section, the team specified the variables: 'Event Managers Availability' (with responses 'yes' or 'no'), 'Supporting Staff' (text data with responses 'Appropriate' or 'Less'), and 'Number of Registration Desks' (with options 'four' or 'five'). Clicking 'OK' resulted in the creation of 16 runs.

Afterward, the team physically collected Vendor waiting time data and entered them into Minitab, as recorded in Table 4 on the DOE Sheet.

StdOrder	RunOrder	CenterPt	Blocks	Event Manager Availability	Supporting Staff	No of Registration Desks	Vendor Waiting Time after the Project
10	1	1	1	Yes	Less	4	13
12	2	1	1	Yes	Appropriate	4	9
13	3	1	1	No	Less	5	10
14	4	1	1	Yes	Less	5	9
7	5	1	1	No	Appropriate	5	14
5	6	1	1	No	Less	5	10
3	7	1	1	No	Appropriate	4	10
15	8	1	1	No	Appropriate	5	9
8	9	1	1	Yes	Appropriate	5	8
2	10	1	1	Yes	Less	4	12
11	11	1	1	No	Appropriate	4	10
1	12	1	1	No	Less	4	10
16	13	1	1	Yes	Appropriate	5	8
9	14	1	1	No	Less	4	10
6	15	1	1	Yes	Less	5	10
4	16	1	1	Yes	Appropriate	4	9

(Table 3 - DOE Sheet)

Subsequently, again in Minitab, the team navigated to 'Stat' tab, and moved to the 'Design of Experiment (DOE)' tab, and selected 'Factorial,' and clicked on 'Queue Plot.' In the response variable section, the team chose 'Vendor waiting time' and clicked 'OK.'



(Diagram 13 - Cube Plot (data means) for Vendor Waiting Time)

If you examine the specific plot in Diagram 13, you'll notice that the lowest waiting time is 8 minutes. The condition for achieving a waiting time of 8 minutes is when the Supporting Staff is deemed 'Appropriate,' the Event Manager's availability is 'yes,' and the number of counters is set at 5. Therefore, having Appropriate Support Staff, an Available of Event Manager, and 5 Registration Desks results in a lowest Vendor waiting time.

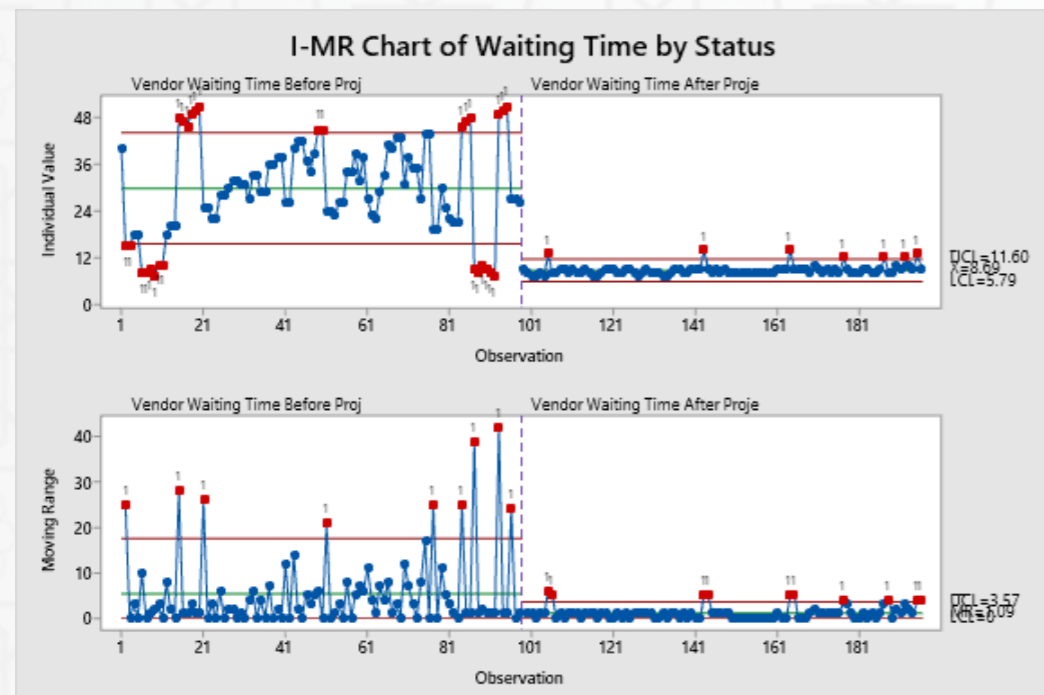
[05] Control

(5.1) I-MR Chart

The Six Sigma team identified this specific condition and configured the process operations accordingly. After implementing this solution, the team collected data on vendor waiting time both before and after the project. The data was then compared and identified a significant decline in vendor waiting time after the project when comparing to vendor waiting time before the project.

Next, the team created a control chart which is I-MR chart by navigating to the 'Stat' tab, then the 'Control Chart' tab, followed by the 'Variables Charts for Individuals' tab in Minitab. Again, the team clicked on 'I-MR'. In the I-MR card, under 'Variable,' waiting time was selected. In the I-MR options, the team selected the 'Stages' tab, and entered the name 'status', and clicked 'OK.'

As illustrated in Diagram 14, you can observe the control chart that has been created. The overall waiting time has been reduced from 30 minutes to 8.69 minutes, and the variation has also reduced. Its moving range, represented by the width of this particular graph, previously had a significant control limit; now it has reduced to between 0 to 3.57. The upper control limit, which was initially at 17.58, has now been reduced to 3.33, indicating a substantial reduction in variation. Therefore, the team successfully completed the project reducing vendor waiting time from 30 minutes to 8.69 minutes.



(Diagram 14 - I-MR Chart Waiting Time by Status)

Test Results for I Chart of Waiting Time by Status

TEST 1. One point more than 3.00 standard deviations from center line.

Test Failed at points:

2, 3, 6, 7, 8, 9, 10, 11, 15, 16, 17, 18, 19, 20, 49, 50, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 105, 143, 164, 177, 187, 192, 195

Test Results for MR Chart of Waiting Time by Status

TEST 1. One point more than 3.00 standard deviations from center line.

Test Failed at points:

2, 15, 21, 51, 77, 84, 87, 93, 96, 105, 106, 143, 144, 164, 165, 177, 188, 195, 196

[06] Conclusion

Cycle Time Reduction :

Cycle time is a key metric used in process improvement and project management to measure the total time it takes to complete a specific activity or process. It essentially refers to the time it takes for a single unit of work to move through the entire system, from start to finish.

Initial Cycle Time: 30 minutes

Final Cycle Time: 8.69 minutes

Therefore,

Cycle Time Reduction = (Initial Cycle Time - Final Cycle Time) /

Initial Cycle Time = (30 minutes - 8.69 minutes) / 30 minutes = 71.03%

Base Sigma :

In process improvement and Six Sigma methodology, Base Sigma refers to the inherent variability of a process before any improvement efforts are implemented. It represents the process's natural level of variation, measured in standard deviations from the mean.

To calculate the Base Sigma accurately, we need the actual average of the MR values.

a. Calculate the individual Moving Ranges (MR).

For each data point pair (Before Project and After Project), calculate the absolute difference: $|\text{After Project} - \text{Before Project}|$. This value represents the Moving Range (MR) for that pair.

b. Sum up all the MR values.

Add up all the individual MR values you calculated in step 1.

c. Divide the sum by the total number of data points.

There are 98 data points in total (49 data pairs). Divide the sum of MR values from step 2 by 98.

d. The result is the average MR.

Here's an example calculation for the first three data points:

MR1 = $|8 \text{ (After Project)} - 40 \text{ (Before Project)}| = 32$

MR2 = $|7 \text{ (After Project)} - 15 \text{ (Before Project)}| = 8$

MR3 = $|8 \text{ (After Project)} - 15 \text{ (Before Project)}| = 8$

Therefore, the average MR for these three data points would be:

$(\text{MR1} + \text{MR2} + \text{MR3}) / 3 = (32 + 8 + 8) / 3 = 16$

You will need to perform the calculations for all 98 data points to obtain the final average MR for the entire dataset. Accordingly, the base sigma is 3.12 after calculating from the average MR and d2 for a sample size of 98)

Sigma Level after the project :

Sigma Level = (Original UCL - New UCL) / Original UCL * 3

Original UCL = 17.58

New UCL = 3.33

Sigma Level = $(17.58 - 3.33) / 17.58 * 3 = 2.43$

Overall Conclusion :

The project successfully achieved a significant improvement in the vendor waiting time process. The key findings include: 71.03% reduction in cycle time: This indicates a substantial decrease in the time it takes to complete the vendor waiting process. Base Sigma of 3.12: This suggests a more stable and predictable process with fewer defects compared to the initial state. Sigma Level of 2.43: This indicates a significant shift towards a more stable and controlled process, with a substantial reduction in variation. These results demonstrate the effectiveness of the project in improving the vendor waiting time process. The reduced cycle time, lower base sigma, and increased sigma level all point towards a more efficient and reliable process.

PUZZLE TIME



M L B B K G W M P C O Y T I L A U T N U P A I W
 O C Y A F N S L E A D E R S H I P Z V S A C Y M
 R H V R C I N Y R Q E E K G H D K E P D T F N O
 G G T O Z S K G U O S M W Z D W P R A R T S H N
 A N G A M I P Q N I D G P E X C C P S K O O Q E
 N I N L D V A D L I X I N A R M T C J F T G L Y
 I T I P T D C E O E S A N I T A G T Q I V B U H
 S A T Z E A A R P Y G I S I B H E K M I I P L A
 A I A M D N A J J O N I T L T A Y E M X I E H N
 T T V N C C Q X A S S J E I M I M U E H T R L D
 I O I E J Y D L L M M N W W R A A L F B K P P L
 O G T G V X S L A H G B O P N O F T M W D D Y I
 N E O U F E B N O N T R E A Z X I V I N Q O R N
 Y N M U T Z A U I L K R G F C K V R M V V O O G
 O D W T B G N N M U S E X B T O N F P K E F T U
 F S I M E W E F U U M Y O B S E R V A T I O N P
 M N I M M T D T A E S B M H A R E C O R D I N G
 G R E B S I Q D N O O F U D A S S E S S I N G I
 J N T I N O I T C E L F E R F L E S B T K O H G
 T D L N A N A N A L Y S I S D K E F A Y K S J Q
 U X Z L G B D B X B D E C I S I O N M A K I N G
 A X P K U N O I T A U L A V E J Y N M L C S T E
 X G N I R E H T A G N O I T A M R O F N I D T W
 G D O P P S H N O I T A C I N U M M O C U C B J

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|-----------------|------------------|----------------------|-----------------|
| Evaluation | CrisisManagement | Resilience | Prioritising |
| Observation | Analysis | InformationGathering | Advising |
| Recording | Leadership | Teamwork | Adaptable |
| Assessing | Flexible | Motivating | Persuading |
| SelfReflection | Listening | Negotiating | Decision making |
| Goal setting | ICT | Empathy | Punctuality |
| Time management | Organisation | FoodPrep | Money Handling |
| Communication | Initiative | | |

“Improve Quality,

you automatically improve

PRODUCTIVITY”

QUALITY

For Sustainable Future

”

Quality is the result of a carefully constructed cultural environment. It has to be the fabric of the organization, not part of the fabric.



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Printed at
KDU PRESS



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