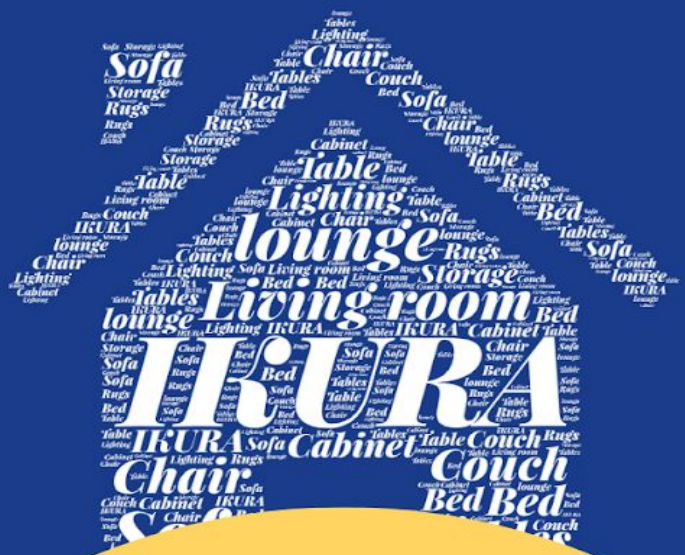

IKURA

Create. Innovate. Inspire.

Digital Transformation Proposal Report

Group 2A

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1. Executive Summary

Problem Statement

This report examines the underlying problems behind IKURA's falling sales and loss of competitive edge over the past few years. It seeks to provide recommendations to alleviate its problems and regain its global market share and compete in the physical and e-commerce sector of the competitive furniture retail industry.

Business Problems & Recommendations

The key first step identified is deemed to be the appointment of a Chief Information Officer to lead and spearhead the Digital Transformation Process. Organisational Restructuring in the form of the creation of an IT department and various sub-departments is essential to create a new focus on IT within IKURA and to foster greater efficiency and a culture of innovation.

IKURA faced a global decline in demand for IKURA's products, with falling sales from 2015 to 2020. This problem was identified to be due to poor demand management by IKURA, with IKURA falling behind digital competitors by failing to undergo eCommerce Integration and incorporate data of consumers' demands into production. Moreover, lower sales can be attributed to poor sales performance and customer experience at IKURA's physical stores, with a 12.3% fall in patronage at their stores over the past 2 years. Thus, digital innovation through the integration of Augmented Reality and Visual Search is key to attract customers to IKURA's eCommerce sites. Furthermore, data and analytics from these platforms would allow IKURA to better predict consumers' needs and ensure that supply meets the right demand. Lastly, the IKURA store experience will be enhanced through the deployment of AI Humanoid Robots, to promote a more interactive physical store experience for consumers.

IT Problems & Recommendations

IKURA's outdated silo-based IT infrastructure and systems resulted in numerous problems, such as frequent delays in the supplier management process. Coupled with the ineffective supplier management structure, there is a strong need to rectify the incompetent model so as to improve the process and management of suppliers. Using the proposed SAP Ariba solutions, it utilises the Supplier Relationship Management (SRM) framework to promote effective partnerships. Moreover, this SAP system has multiple functionalities that improve the agility of the supply chain, allowing a simpler and efficient supply management method.

In 2019, IKURA suffered a 10% revenue loss from cyberattacks due to the lack of standard security implementation. The lack of cyber risk management resulted in various system malfunctions and downtime throughout the organisation. As such, it is extremely critical and necessary for IKURA to address the gaps and loopholes in their cyber platform. iLEAD recommends the National Institute of Standard and Technology (NIST) Cybersecurity Framework. This framework aims to provide the blueprint for IKURA to follow so as to ensure that their security standards, policies and practices are accurately adopted.

2. Overview of the IKURA Company

IKURA, founded in 1943, emerged in the international market with their unique IKURA Concept; to provide affordable ready-to-assemble furniture and home appliances with functionality, concept, design and sustainability in mind. With their emphasis on continued cost reduction and product development, IKURA has enjoyed a first-mover advantage and expanded its operations globally, with 433 stores operating in 52 countries worldwide as of 2019.

3. Industry Overview & External Environment

In the past decade, rapid urbanization and digitalization resulted in IKURA's single-channel and retail core business model no longer being viable. Due to digitalization, IKURA faced a growing number of online competitors such as Amazon, TaoBao and Alibaba. Brick-and-mortar sales took a sharp decline as a result of urbanization, due to customers no longer frequenting IKURA's out-of-town retail stores as often and choosing to purchase from online retailers instead. This resulted in falling sales revenue over the years (Figure 1) and a resulting increase in excessive inventories across the world.

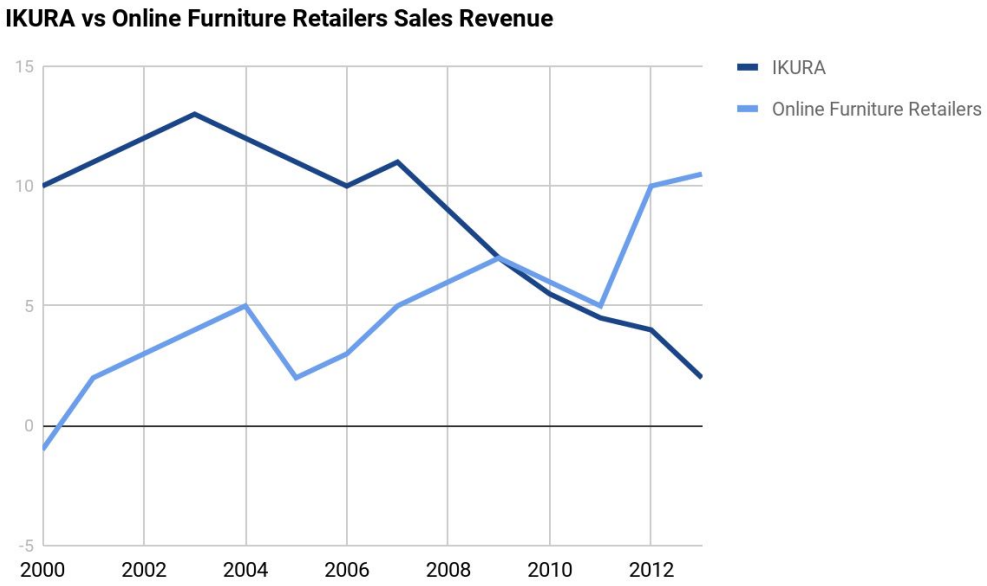

Figure 1: IKURA vs Online Furniture Retailers Growth

As a result of the increase in online competitors, IKURA experienced a fall in the industry's market share worldwide (Figure 2, 3). The fall in market share due to the influx of online furniture competitors was further exacerbated by IKURA's lack of preparedness to move into the online space.

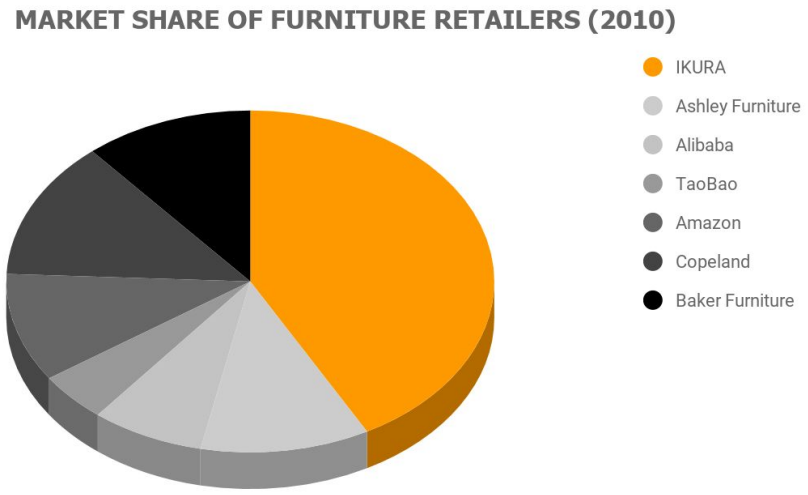

Figure 2: IKURA vs Furniture Retailers Industry Market Share (2010)

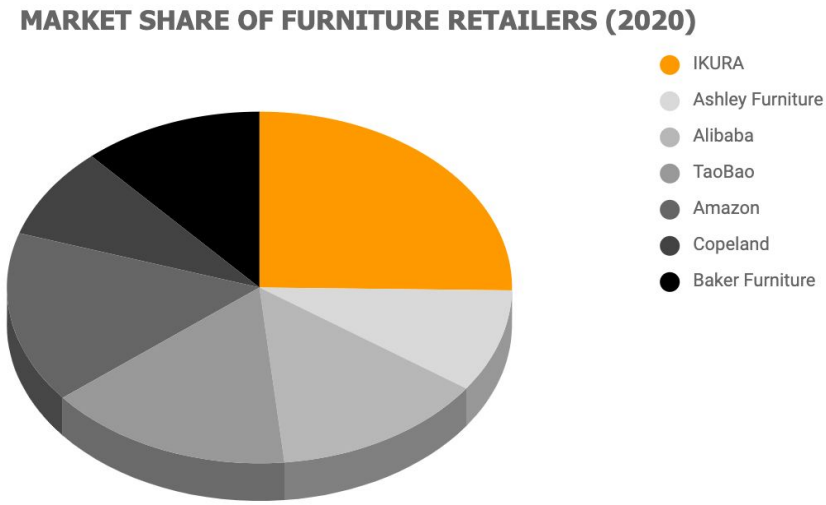

Figure 3: IKURA vs Furniture Retailers Industry Market Share (2020)

4. Organizational Issues

To mitigate the business issues and implement a digital transformation plan, IKURA engaged iLEAD Consulting, a technology leadership consulting firm, to audit IKURA's corporate IT department and provide recommendations for the planned digital transformation. With more than 20 years of experience in the consulting field, iLEAD Consulting was selected for its expertise in Business and Information Technology transformation.

After an observation period, iLEAD has identified the following key business problems and analysis:

4.1. Sub -Problem 1: IKURA Organizational Structure

Under the current organizational structure and the previous focus of utilising IT to generate greater revenue, the IT department is placed under the Finance Department and reports to the Chief Financial Officer, Juvencio Maeztu. The structure effectively absolves the IT department of authority to adopt and develop new technologies and restricts the budget for maintenance, new investments and hiring of new talents.

4.2. Sub -Problem 2: IT Department Organization Structure

The lack of structure internally within the IT Department indicates an issue with IKURA's governance. The improper delegation of work and unclear workflow results in great inefficiency, with employees within the IT department often being assigned to projects and tasks outside of their initial job scope and expertise. Feedback from a current IT Department member highlighted the issue as such:

> *More often than not, we end up working on projects and tasks that we have no knowledge or expertise, or get suddenly transferred a new task or job to do. This results in inefficiency because there's no continuity of projects, and we have to pick up the skills first before doing any work.*
>
> KRYSTAL SMITH, IT DEPARTMENT MEMBER, IKURA

4.3. Sub -Problem 3: Outdated IT Infrastructure: IT Silos

The budget for the IT department in the past few years is relatively stagnant and failed to grow relative to the sales of the company. This has resulted in an outdated IT Infrastructure of an outdated patchwork of software systems and programs. Moreover, the budget allocation was skewed towards license fees (15%) and operating costs (65%), with just 10% allocated to innovation and maintenance of existing systems (Figure 4).

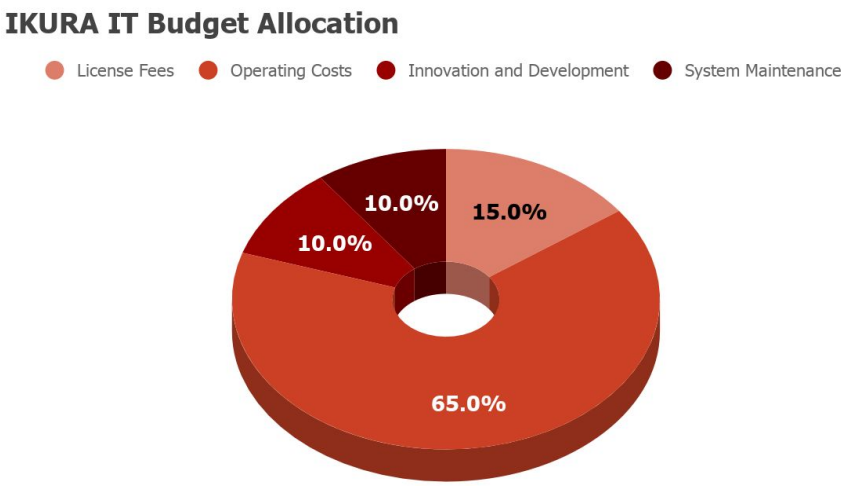

Figure 4: IKURA IT Budget Allocation

4.4. Sub -Problem 4: Company Culture & Organizational Silos

IKURA operates with a silos mentality due to its hierarchical company structure. The silos mentality has resulted in a lack of cross-departmental initiatives and innovations, stemming from inadequate means to share information across departments and unclear channels for IT-related initiatives and demands. In such an environment, the company culture can be affected, where IKURA employees may feel out of touch with the present-day vision and mission. Employees may feel powerless to voice out concerns to upper management and to pursue innovation.

5. iLEAD's Recommendations for Organizational Solutions

With the core focus of striving towards the planned digital transformation, iLEAD has come up with a holistic solution which targets the aforementioned organizational issues.

5.1. Appointment of CIO

To address the current organization structure and the IT department's lack of authority and power within IKURA, iLEAD recommends for the appointment of a Chief Information Officer (CIO) to lead the IT department and spearhead the digital transformation process. Following multiple rounds of interviews, iLEAD has identified Dr Davide Urani as a potential CIO candidate.

Dr Davide Urani has a Masters in Computing with a Computer Science Specialisation and a Doctor of Philosophy (PhD) in Business and Management. With more than 20 years of experience in company restructuring, he has worked closely with companies in the likes of TaoBao and Amazon and led the digital transformation processes that propelled them to the

forefront of the e-commerce business today. He was also previously the IT manager in the international e-commerce website, Alibaba, and is well-versed with the usage of technology to manage demand and supply chains and e-commerce strategies for greater customer satisfaction.

The organization structure would be shuffled such that the IT Department now reports to the newly appointed CIO, thus providing the IT Department with its authority to initiate projects and adopt new technologies (Figure 5).

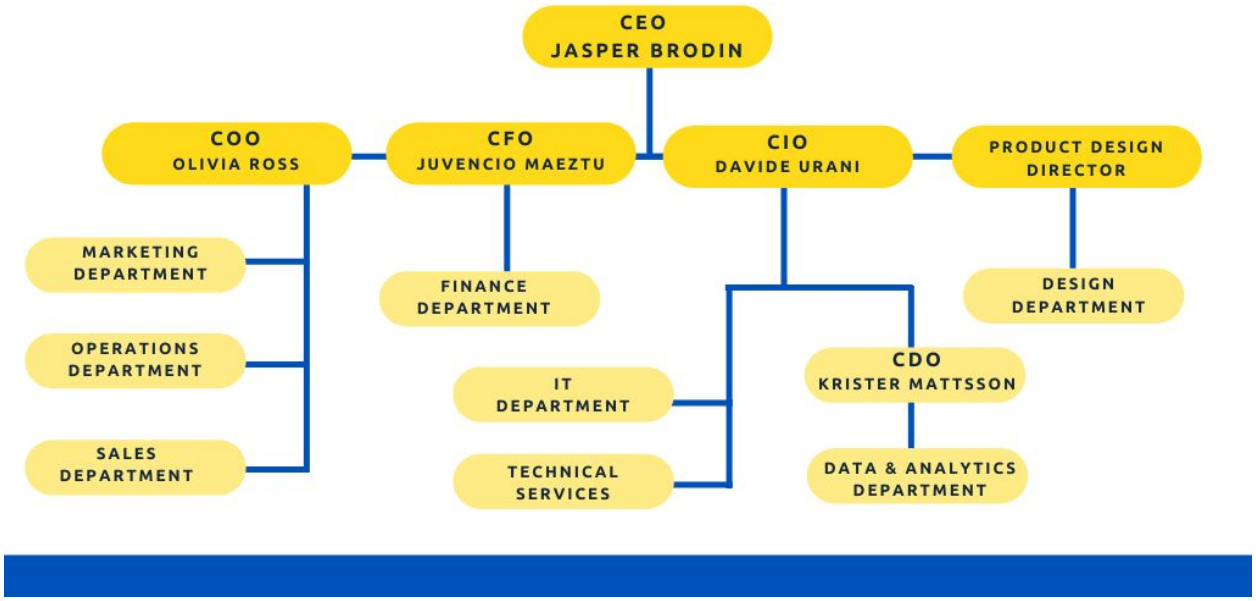

Figure 5: Newly Proposed Organizational Structure

5.2. Restructuring of IT Department

To resolve the unclear workflows and organization structure internally within the IT Division, iLEAD proposes for the creation of 4 new departments at the departmental level (Figure 6):

- Project Development

The Project Development Department will oversee the initiation of new projects and pursue greater innovation. It will also serve as the formal request channel for IT demands from other departments and would be granted the authority to prioritize the various initiatives it handles.

- Cyber Security

iLEAD identified a strong need for a cybersecurity department, given the recent 2019 cybersecurity attack on IKURA that had shattered consumer and shareholders' confidence. The Cyber Security Department would be placed in charge of the planned implementation of the National Institute Of Standard And Technology (NIST)

Cybersecurity Framework (CSF) that would serve to mitigate and address potential cybersecurity risks.

- Software Engineering

The Software Engineering Department would maintain and improve software systems, programs and applications. The main focus would be to ensure that systems are client-focused and updated to meet IT standards.

- Data and Analytics

The Data and Analytics Department would be led by CDO Kristin Mattsson and focused on utilising data to address demand and supply issues.

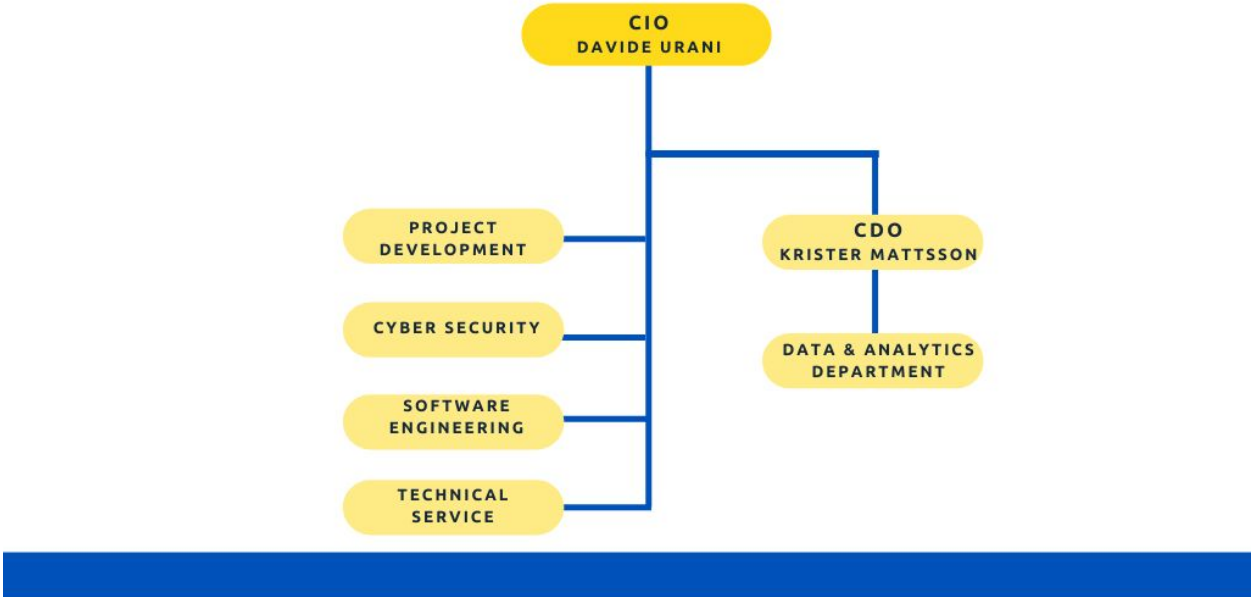

Figure 6: Newly Proposed IT Departments at the departmental level

5.3. Improved Budget Allocation

Given the existing IT silos and outdated software systems, iLEAD has identified the underlying root cause to be the lack of budget allocation to the maintenance of systems. As such, the new proposed budget for the IKURA company and IT department is visualised below (Figure 7,8). The newly proposed IT Department Budget Allocation would allocate a greater proportion of the budget to system maintenance and innovation and development. It is expected that the increase in allocation to system maintenance, innovation and development would come from an expected fall in operating costs and license fees, with IKURA now switching away from the old legacy systems that required hefty licensing fees and maintenance.

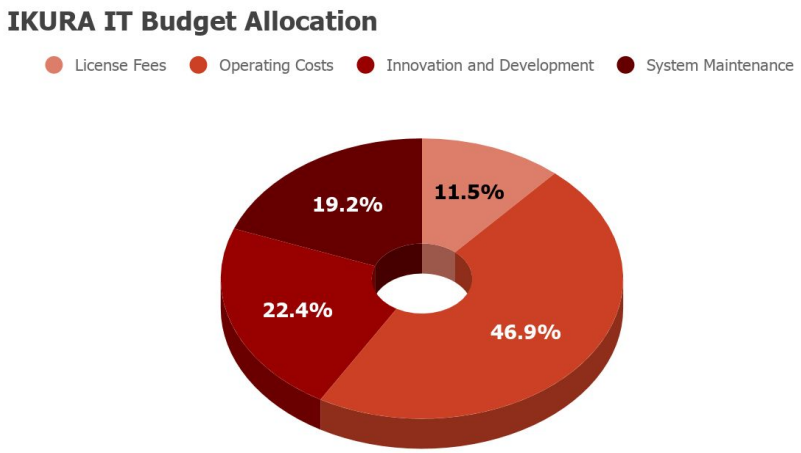

Figure 7: Proposed IT Department Budget Allocation

5.4. Influential Communication for Employee Empowerment

To address the organizational silos and to empower employees, iLEAD proposes a three-step approach focused on communication and a paradigm shift in company culture (Figure 8).

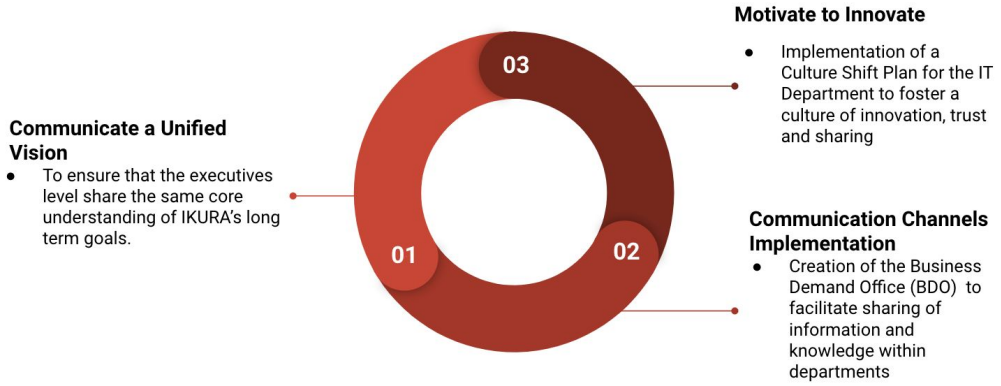

Figure 8: Overview of Proposed Plan

- Communicate a Unified Vision

To break down departmental barriers and silos, influential communication with a unified vision is crucial to create a culture of sharing information. To do so, the executive levels should share the same core understanding of IKURA's mission and visions before passing it down to the departmental level.

- Communication Channels Implementation

In iLEAD's proposed approach, the creation of Business Demand Office (BDO) would seek to provide the channels for interdepartmental information sharing. All business demands of IT-initiatives and innovation would be channelled through the Business Demand Offices of the key 5 domains of IKURA (Marketing, Operations, Sales, Finance and Design) to the proposed Project Development Department within the IT Department Team.

- Motivate to Innovate

To foster a culture with a greater focus on Innovation within the IT Department and to ensure that innovation is a continuous process, a Culture Shift Plan (Figure 9) is proposed, as well as the following Innovation-Continuity Bicycle principle (Figure 10).

Figure 9: The Proposed Culture Shift Plan for the IT Department

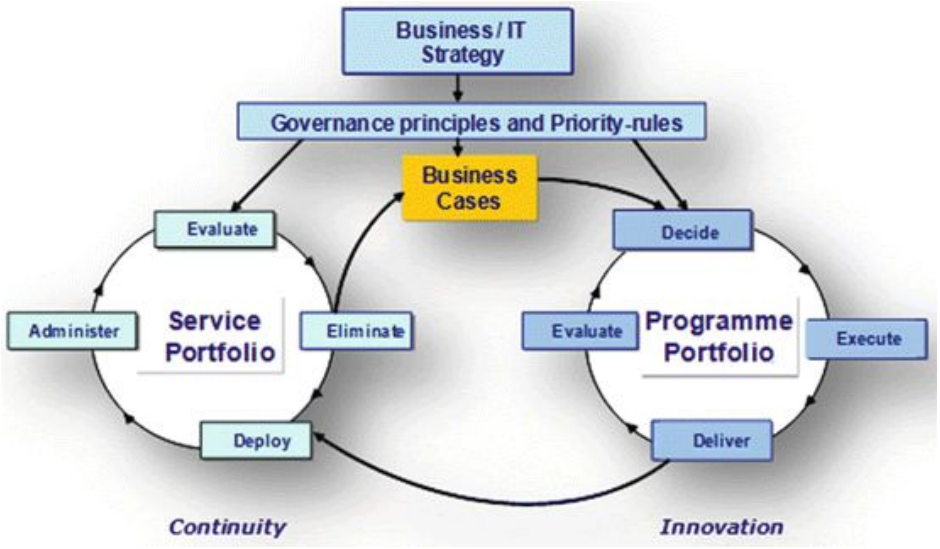

Figure 10: Innovation-Continuity Bicycle

6. Overview of IT/ Business Problems

iLEAD conducted an organisation assessment using SWOT analysis (Figure 11.1), with an audit to access the current state of IKURA's IT operations and identified the following 3 overarching aspects of IKURA (Figure 11.2) that resulted in the respective IT/Business problems:

Figure 11.1: IKURA's SWOT Analysis

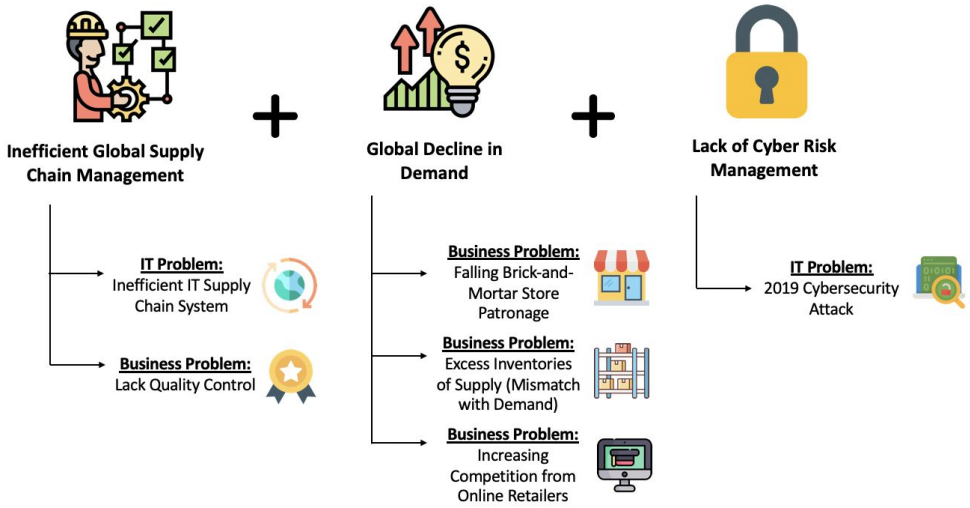

Figure 11.2: Overview of IKURA's IT/ Business Problems

As such, iLEAD will be proposing the digital transformation proposal in accordance with these 3 overarching aspects.

iLEAD's Digital Transformation Proposal

7. Inefficient Global Supply Chain Management

IKURA's supply chain has experienced multiple IT/ business problems in recent times. These are the following problems:

Inefficient IT Supply Chain System

Across the globe, IKURA still uses independent legacy systems. IKURA's manufacturers reported frequent delays in the supplier management process, resulting in higher lead time in the manufacturing process and hence a fall in revenue.

Lack of Quality Control

IKURA's retailers experienced 5.8% of manufacturing defects on goods received from distribution centres. This led to a high volume of returns and refunds from customers, leading to a decline in IKURA's reputation.

Hence thorough research and analysis were conducted to understand the current state of operations in IKURA's supply chain.

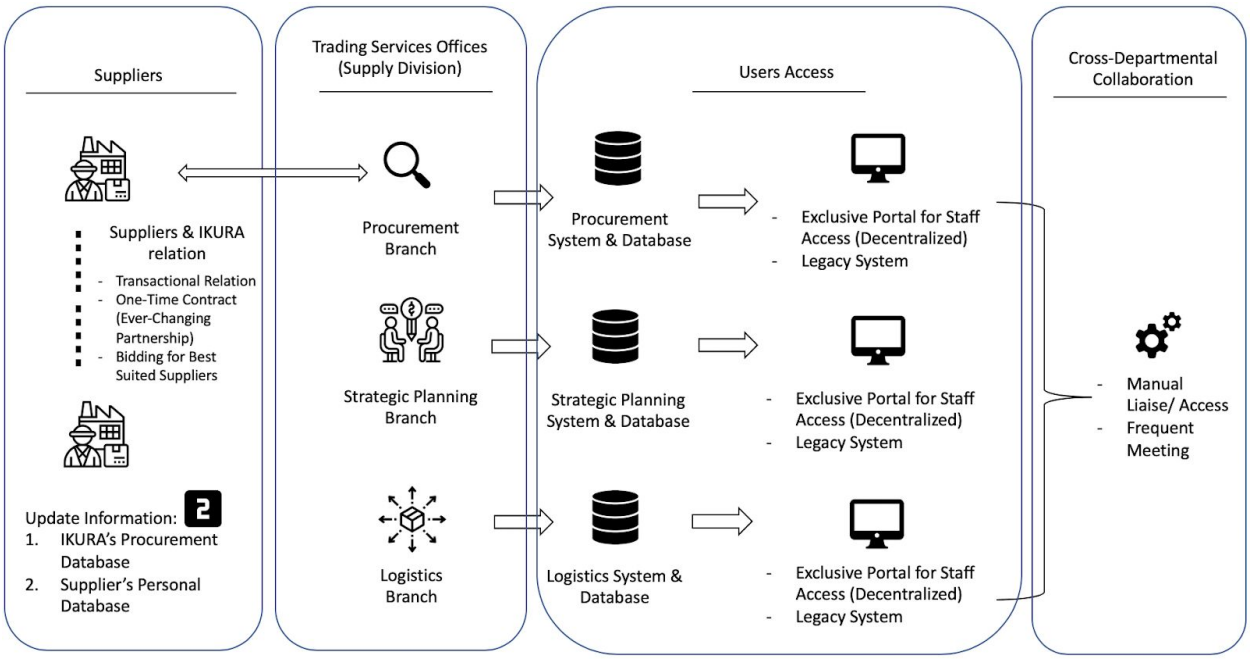

Figure 12: IKURA's Outdated Silo-Based IT Architecture/ System

Currently, IKURA uses 42 trading service offices around the globe to manage suppliers. Within each office, there are three main branches: procurement, strategic planning, logistics. Each branch solely focuses on its own functionality and system, customising their own IT system. IKURA's silo-based management has contributed to the segregation of IT systems across different branches. This silo-oriented IT architecture has caused inefficiency for

cross-departmental collaboration. Moreover, most supply divisions are still using an enterprise system package from Baan Corporation in the 1990s. This resulted in numerous software delays and stability issues. IKURA's decentralized portal structure and legacy system are deemed as the main limitation of their outdated IT infrastructure and system. Next, we will investigate the structure of the supply chain management.

7.1.1. Sub-Problem 1: Lack of Vertical Integration

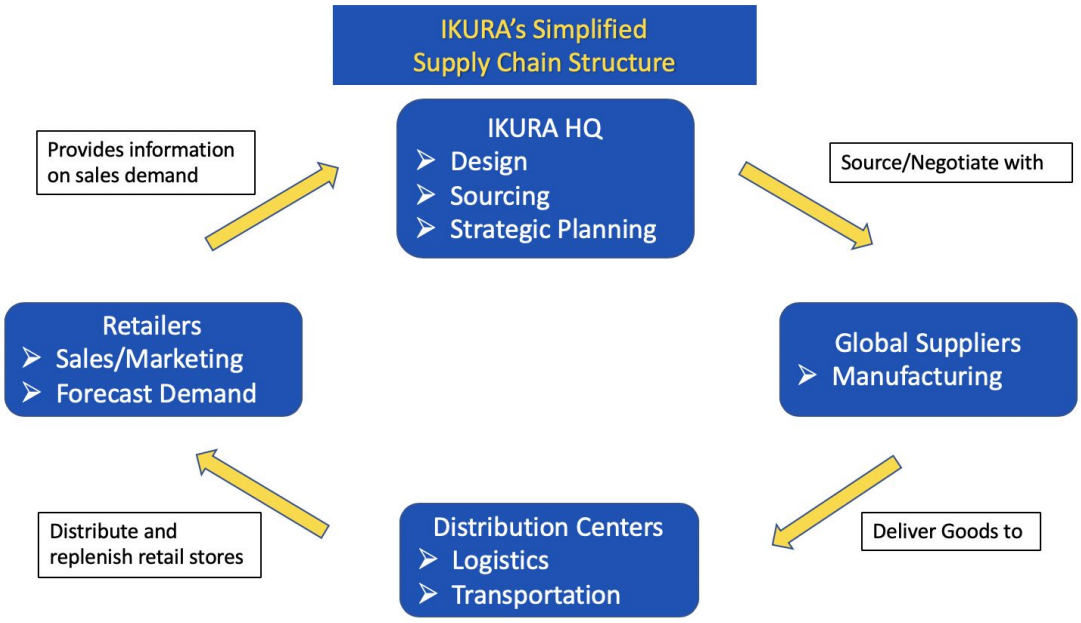

Figure 13: IKURA's Simplified Supply Chain Structure

Despite being a leading furniture retailer, IKURA does not have full control over its supply chain. While most of IKURA's products are designed in Sweden, production is outsourced to China and other Asian countries. Despite having a network of over 1000 independent suppliers, iLEAD's analysis found that there is no form of intervention by IKURA on their supplier's planning. Suppliers have to source and secure their own raw materials from other suppliers to manufacture furniture. This process often causes suppliers to deliver goods late due to inadequate communication between different parts of the supply chain. The lack of vertical integration in IKURA's supply chain resulted in higher lead time as IKURA has to spend more time on negotiation between multiple suppliers. As such, iLEAD concluded that there needs to be a heavier emphasis on supply chain planning to improve relations.

7.1.2. Sub-Problem 2: Lack of Centralised Planning

iLEAD discovered that different stakeholders in the supply chain (production outlet, warehouses, stores, etc) tried to improvise their own function and processing sequences independently, resulting in an imbalanced supply planning landscape.

The IT systems utilised by various IKURA factories across the world are not standardised. For example, in IKURA Italy, the automation of processes and records management utilises the technology provided by TeleForm and Autonomy WorkSite. On the other hand, IKURA United States (US) relies heavily on Microsoft software to automate processes and manage records.

iLEAD pointed out that IKURA's variety of IT systems and solutions might be useful for local departments, but it hinders IKURA's strategic growth and development. The existence of such IT complexity poses a threat to knowledge sharing as there are too many different routines within the supply chain. This functional orientation with limited transparency between functions and sub-processes causes reactive and unsynchronised planning behaviour.

iLEAD concluded that there is decentralised planning of its network of suppliers, distribution centres (DCs), stores and forwarders, resulting in an ineffective supply chain management. Hence, IKURA urgently needs a unified system to manage resources and knowledge sharing.

7.1.3. Sub-Problem 3: Vulnerability to External Environment

Given the structural connection in the supply chain, iLEAD realised that a single bottleneck can potentially harm the whole supply chain.


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'Crisis mode': Coronavirus disrupts the heart of furniture manufacturing in China

PUBLISHED SAT, FEB 8 2020•9:25 AM EST | UPDATED WED, FEB 12 2020•1:52 PM EST

Kif Leswing
@KIFLESWING

SHARE

How delays could cascade

The supply chain has already been disrupted with the week-long delay to factories reopening, said Shehrina Kamal, risk analyst at Resilience360, a logistics risk-management company backed by IKURA.

"The ripple effect coming from one region in China is completely unprecedented," Kamal said. "We've never seen anything like this."

Factory staffing could be an issue that lasts long beyond the peak of the outbreak, given that many factory workers in China travel from the countryside to factories in urban areas.

Figure 14: News Extract from CNBC News

The recent outbreak of coronavirus has impacted a crucial hub, the whole of China, on which IKURA is heavily dependent on. The Chinese manufacturing industry was badly hit, with many facilities shut down for months. As a result, there was a massive supply chain disruption affecting the production and delivery of goods.

Given the volatile environment, risk assessment on suppliers is therefore deemed crucial to protect IKURA from market uncertainties. IKURA's traditional manual risk scoring, which is time-consuming and costly, is deemed ineffective. This is because the relevant data is fragmented across numerous systems and processes. Hence, this highlights the need for integrated systems in detecting early warning signals.

7.2. iLEAD's Analysis: Supplier Relationship Management

Based on the existing supply chain process, there is a lack of formal process to identify suppliers with the greatest strategic significance. Suppliers have to go through the same quotation process with other competitors to seal the deal. With this undesirable transactional relationship, iLEAD proposes the need for a Supplier Relationship Management (SRM) Framework (Figure 15).

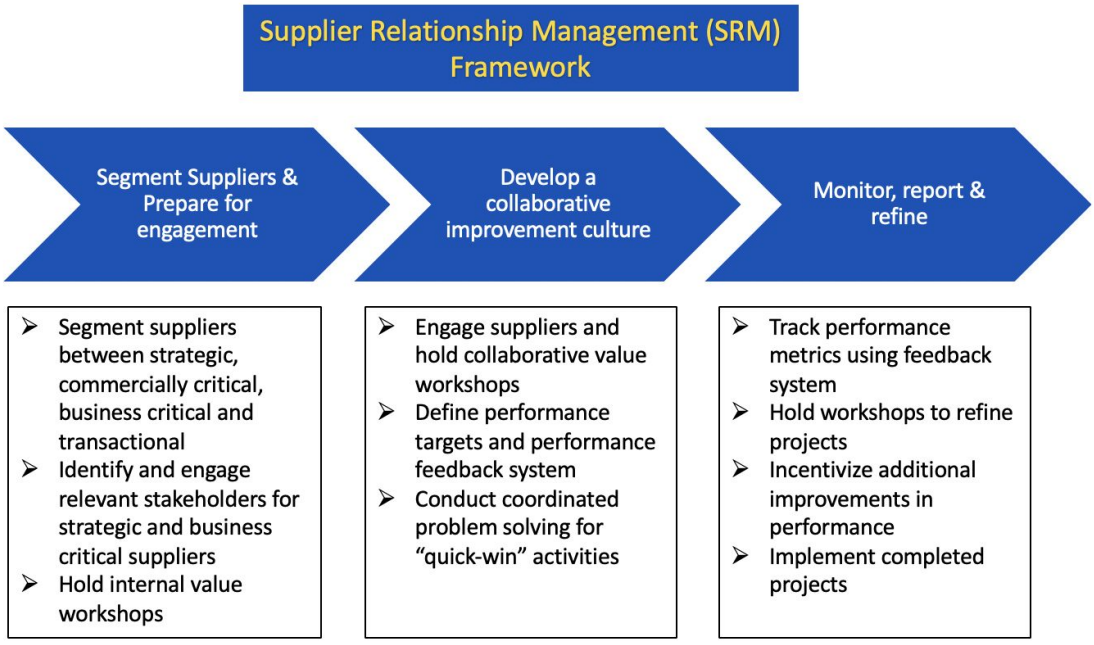

Figure 15: Description of SRM framework

SRM refers to a methodology that develops stronger management of supplier relationships. There are three crucial steps to adopt to effectively manage suppliers. The two-way partnership is mutually beneficial as it addresses the needs of the buyer and seller.

7.3. iLEAD's Recommendations

7.3.1. SAP Ariba Supplier Lifecycle and Performance (SLP)

Figure 16.1: Overview of SAP Ariba (Supplier Lifecycle and Performance)

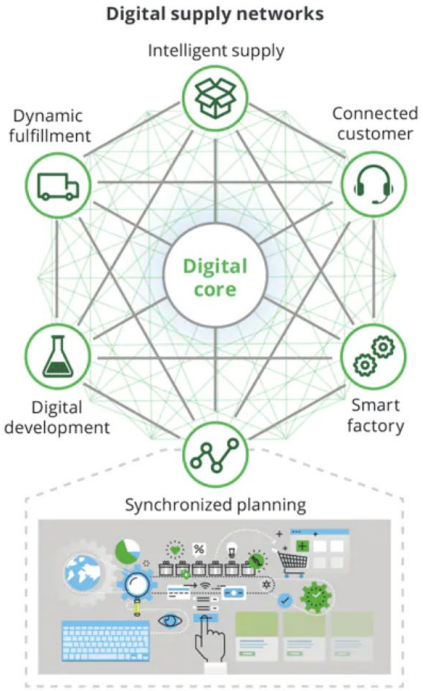

Figure 16.2: Overview of Digital Supply Network

SLP provides a global and unified ERP system for all departments and branches of IKURA to effectively manage its suppliers. The Ariba network utilises cloud computing to connect suppliers and IKURA in one place.

SLP will help IKURA to create a common and standardized working method under a centralised organisation, with an integrated IT infrastructure that spurs advanced planning for the supply chain. SLP automates and integrates all business processes for buyers and suppliers in one place. This 360-degree comprehensive view (Figure 16.1) allows workers in IKURA departments to easily find their preferred suppliers, and update the whole system just from one platform. The simplified process reduces the complexity of multiple updates to different unsynchronised systems, thus bringing tremendous convenience to IKURA.

From the supplier's perspective, SLP allows suppliers to self-manage their information using a single SAP Ariba supplier network portal. This accurate and up-to-date information facilitates greater collaboration between IKURA and its supplier. As such, IKURA can now focus on long-term strategic alliances which will, in turn, stabilise the supply chain.

SLP implementation clearly utilises the SRM framework by having this common shared digital platform (Figure 16.2) to commerce in. It makes centralised planning effortless as SLP allows IKURA to coordinate and recognise the choice of supplier. With more data stored about the supplier, it allows IKURA to make better decisions. Hence, this ensures good quality goods from the most best-suited suppliers.

Therefore, SLP helps to curb the effect of the lack of vertical integration by connecting suppliers, and also enhance centralised planning. The focus on SRM fosters stronger collaboration within the supply chain, improving the efficiency of goods production and delivery. All these effects will eventually boost sales and profits for IKURA.

7.3.2. SAP Ariba Supplier Risk (SR)

In conjunction with SLP, SR helps IKURA to monitor, measure and mitigate supplier risk by delivering ongoing real-time insights on all risk incidents that impact the supplier ecosystem.

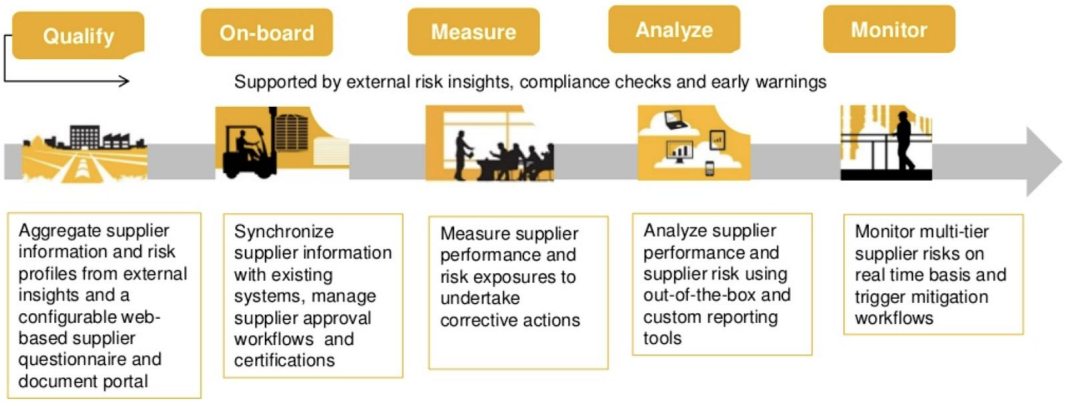

Figure 17: Overview of the SR Management

The real-time supplier risk visibility is provided through a semantic analysis of web data to source out risk events that the supply base is exposed to. It utilises predictive intelligence to

assess risk potential and impact. The supply base risk profile extends to the supplier parent and child and other supplier levels, offering more network-driven risk visibility. By integrating risk insights into the supplier lifecycle, it helps to alleviate the impact of global crisis and supply chain disruption by providing a strong network of suppliers for IKURA to reroute to the next best supplier if needed.

8. Global Decline in Demand

IKURA has experienced a decline in global demand in the past 6 years (Figure 15).

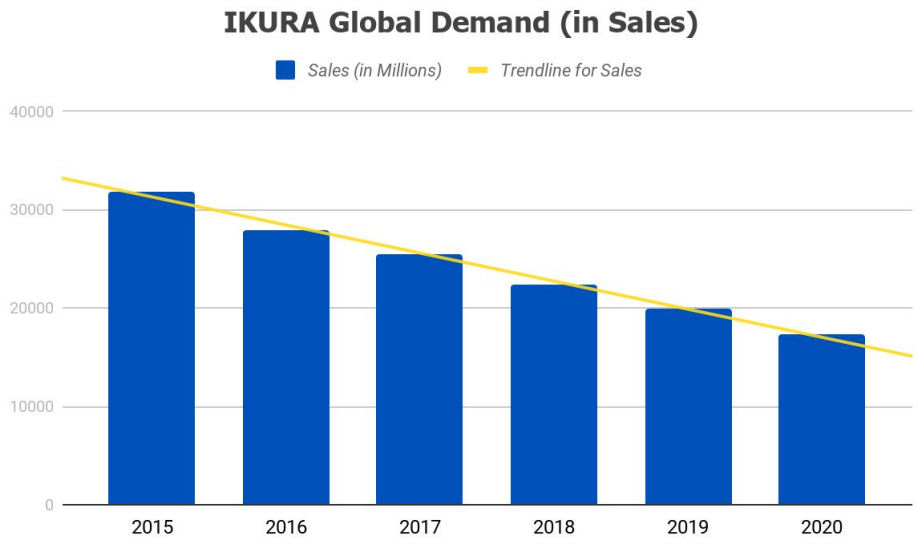

Figure 18: Sales Figures of IKURA (2015-2020)

Through further analysis into the root cause behind the fall in demand, iLEAD recognised that the decline was exacerbated due to 3 sub-problems; the IKURA physical store experience, a mismatch of demand and supply, and a loss of competitive edge in the digital sphere.

8.1.1. Sub-Problem 1: Poor IKURA Physical Store Experience

iLEAD has discovered that the poor IKURA brick-and-mortar store experience was a key factor for declining demand. The percentage of customers visiting and shopping at IKURA's brick-and-mortar stores have fallen by 12.3% over the past 5 years. Given IKURA's reliance on its physical stores as a sales channel, the reduced patronage to IKURA's stores subsequently led to lower sales. Through focus group discussions with customers, the majority of respondents were unsatisfied with the IKURA physical store experience. Also, IKURA's previous OG4 policy to restructure store worker's roles resulted in a 13.6% increase in turnover rate. IKURA physical stores thus shifted to a workforce of majority part-time customer staff, with a significantly lower level of experience and commitment levels.

IKURA Focus Group Discussion Findings

"Why have you stopped visiting the IKURA store?"

		Response Percentage (%)	Customers Feedback
1	**Repetitive Store Experience**	**64.7%**	"Every time I visit the store, it feels repetitive. There is hardly anything interesting or new."
2	**Unsatisfactory Employee Service**	**53.1%**	"There are too few employees in store to assist me . Employees are often new and unable to provide me with what I am asking for."
3	**More Information Online**	**37.4%**	"It is easier to go online to find details about the product."

Figure 19: Customer Responses Regarding IKURA's Store Experience

The focus group discussion findings revealed that the main reasons behind customers dissatisfaction with the IKURA physical store experience stemmed from the lack of interesting additions and features in the store, as well as the insufficient number of frontline staff to assist customers with inquiries.

8.1.2. iLEAD's Recommendation: Artificial Intelligence Humanoid Robots

8.1.3. Rationale & Expected Benefits

iLEAD recommends for IKURA to leverage on the technology of Artificial Intelligence (AI) such as using Humanoid Robots (HR) in IKURA physical stores. HR encapsulates the latest technologies such as Facial Recognition, Voice-Activated Service as well as Machine Learning capabilities (Figure 20).

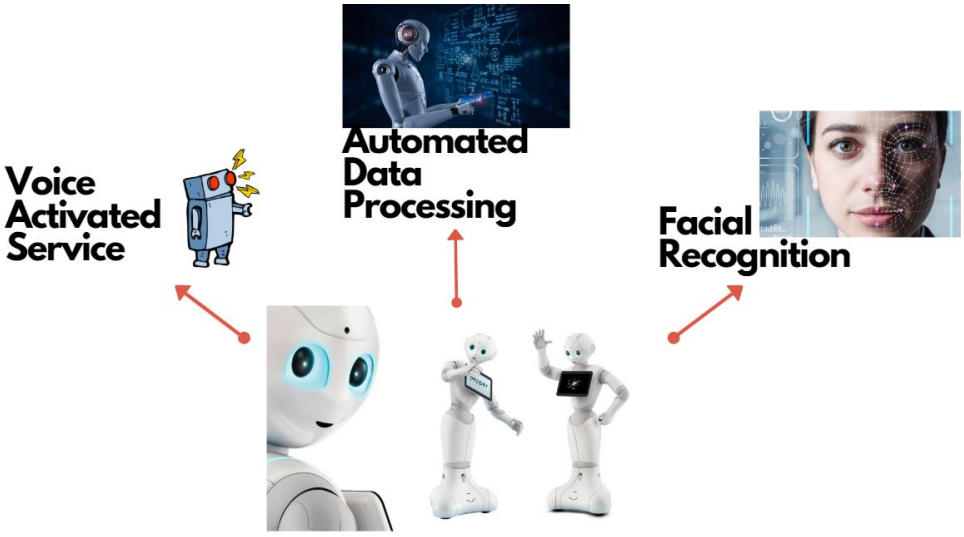

Figure 20: HR Technologies

With the adoption of HRs, IKURA can harness the power of AI to address the two key issues of the poor IKURA Physical Store experience.

Firstly, HR would provide a more interactive experience, by capturing a spectrum of information about the following: Customer Purchase patterns, Enquires, Payment and In-Store Shopping habits. For example, HR Facial Recognition can be utilized to identify the individual, before using its Voice Activated Service to interact with customers. Through multiple interactions, they can then improve their responses with in-built Machine Learning algorithms. Customer information can then be stored, retrieved and built upon during their next interaction with the HR, ultimately creating a personalized and luxurious in-store experience for individual customers. As a result, customers would be more likely to patronize the physical stores more often.

Secondly, the use of HR reduces the burden of the few frontline staff in assisting and answering customers enquiries. With in-built knowledge regarding all IKURA products, the HR will be able to provide accurate and customized answers.

8.1.4. Cost Analysis & Implementation

For the choice of HR, iLEAD recommends Pepper, a HR from SoftBank Robotics. Pepper has been adopted in the hospitality industry since 2016, for concierge services such as checking in and cleaning. This reinforces the potential of HR technology in providing personalized service for IKURA. iLEAD has provided the proposal for the implementation of Pepper in each outlet to utilise a gradual roll-out and to analyse customer sentiment (Figure 21).

Figure 21: Proposed 2-year implementation plan for IKURA's new in-store HR technology

IKURA can choose to halt the implementation should any of the 4 proposed semi-annual assessments not meet the pre-defined needs, as a risk mitigation strategy.

In addition, iLEAD has also provided a cost analysis breakdown of implementing HR in determining its feasibility as provided below (Figure 22).

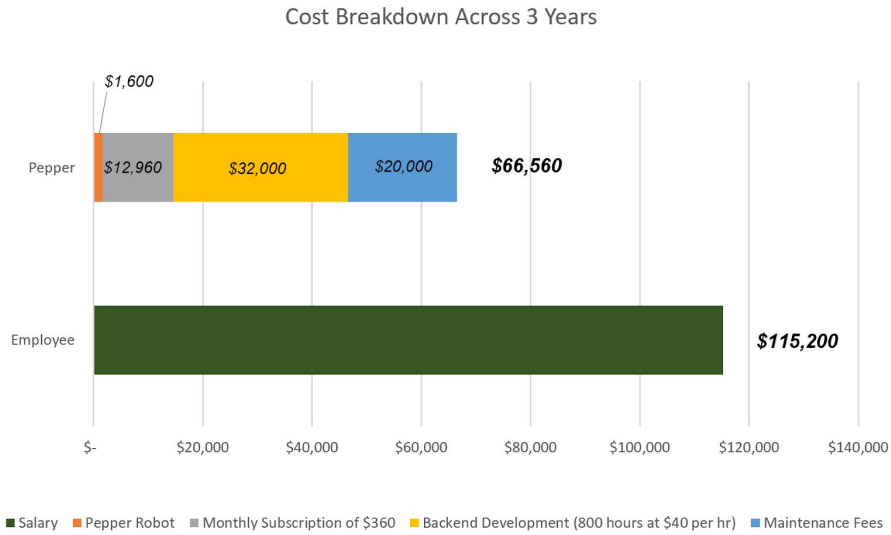

Figure 22: Cost comparison of 1 employee against 1 Pepper

iLEAD concludes that the use of Pepper would be a better long term financial investment as compared to a single employee, with the 3-year cost being almost half of the cost to retain and train an employee.

8.2. Sub-Problem 2: Mismatch of Global Demand and Supply

IKURA recorded a growing proportion of unsold inventories of supply worldwide, with an increase of 7.4% in the past 2 years. Upon further analysis, iLEAD identified the root cause of this supply surplus which is from a mismatch between demand and supply due to IKURA's ethnocentric strategy. Being a multinational corporation, IKURA ethnocentric strategy fails to account for differing consumers' tastes and preferences across regional markets, as well as specific needs.

iLEAD's Recommendation: Data Analytics

8.2.1. Rationale & Expected Benefits

With the proposed use of data analytics, IKURA would be able to gain insights into improving customer experience, as well as managing their suppliers. This would also facilitate the prediction of expected demand in each regional market, allowing IKURA to adjust their inventory levels accordingly.

8.2.2. Implementation

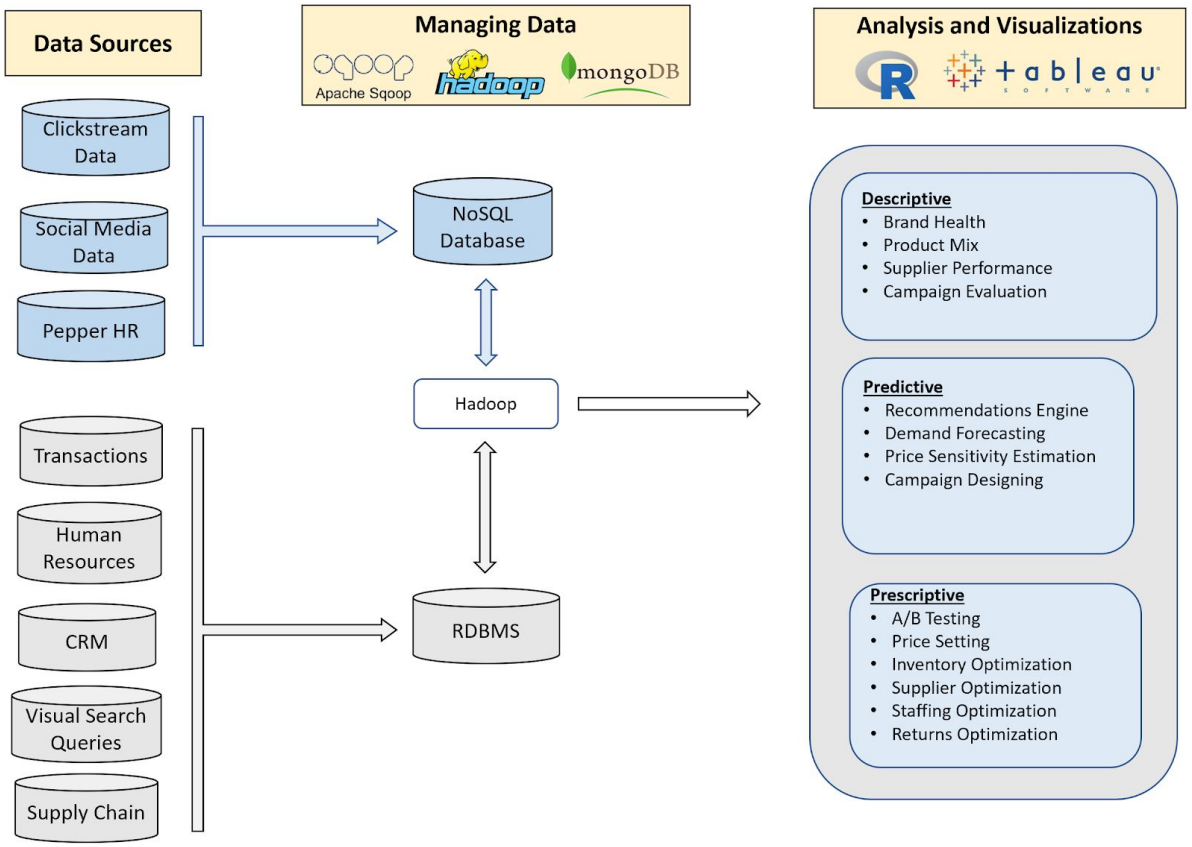

Figure 23: Proposed Data Architecture for IKURA

IKURA should first ensure that its databases are not too fragmented, and can be easily accessed by its data analytics team, as recommended in Figure 23. The following data sources are particularly important: clickstream data, demographic information of customers, customer surveys, purchasing records, supplier information, delivery schedule and social media data mining.

In order to utilise data analytics to generate insights into consumers' purchase trends and preferences, it requires large scale data collection. Due to the sheer volume of data involved, iLEAD recommends NoSQL databases such as MongoDB, where documents are stored in JSON format. This system offers high scalability in comparison to traditional relational databases and would facilitate the storing and retrieving of big data. Apache Sqoop can be used to connect Hadoop with the MongoDB and SQL databases, which would enable the importing and exporting of necessary data. Hadoop is a recommended framework as it facilitates data processing with its distributed computing technology. This can be used in conjunction with R, to perform analytical computations on the data.

iLEAD proposes a 3-step approach using data analytics: descriptive analytics is first used to reveal problems and anomalies, before delving deeper into predictive analytics, which highlights

likely future scenarios. Lastly, prescriptive analytics can be used to help IKURA capitalize on opportunities.

Descriptive Analytics

Customer surveys and social media data tend to be open-ended, and difficult to process manually. Thus, natural language processing is recommended to extract customer sentiment and keywords from this data. Text classification algorithms such as Naïve Bayes would then sort them into different categories, enabling IKURA to build Tableau visualizations on consumer trends and demands. For example, a growing interest in sustainability would indicate a strong potential market for eco-friendly furniture.

Predictive Analytics

IKURA could fetch the clickstream data from their websites' visitors, mapping out how each user navigates the online purchasing process. This captures information on other items which they would be interested in purchasing, and Decision Tree algorithms can be used to generate suitable recommendations. For example, customers who view barbeque trolleys are likely to stay in landed properties, and would thus be interested in outdoor furniture and cushions.

Prescriptive Analytics

Stochastic Optimization methods would help IKURA to make effective decisions at this stage. For example, stochastic gradient descent could be used to automate the returns process, by quickly evaluating the trade-offs between waste disposal against restoring and selling used products.

Figure 23 (shown above) further reinforces how the proposed analytics framework will be integrated, thus allowing IKURA to optimize their business processes and better fulfil customer demands.

8.2.3. Sub-Problem 3: Lack of Competitive Edge in the Digital Sphere

Digitalism has resulted in stiffer competition in the ready-to-assemble furniture industry, with online e-commerce sites such as TaoBao and Alibaba. The increased competition from the digital sphere resulted in a loss of demand for IKURA's products, due to online sites selling items with similar designs at lower price points and a shift in preference from retail to online shopping.

iLEAD's Recommendation: Augmented Reality and Visual Search

8.2.4. Rationale & Expected Benefits

iLEAD proposes that the existing IKURA application could introduce technology such as Augmented Reality (AR) and Visual Search to make the overall shopping experience more immersive for consumers (Figure 24). The novelty of implementing AR technology and Visual

Search allows for IKURA to gain a competitive advantage over their industry competitors who have yet to invest in these technologies.

Figure 24: Augmented Reality Application

The proposed Augmented Reality features would help to minimize administrative and handling costs. Products may seem appealing in online catalogues or physical showrooms but are incompatible with customers' homes in reality. AR solves this by allowing customers to visualize how each product would look and fit in a particular space, enabling them to make better choices. This, in turn, minimizes the likelihood of product returns and reinforces buyer confidence. In addition, AR provides customers who are unwilling to travel to physical showrooms with a convenient and immersive solution.

iLEAD also suggests the incorporation of Visual Search technologies, where customers can instantly find their preferred furniture or designs within the IKURA mobile application catalogue by simply snapping a picture (Figure 25). This would help to drive impulse purchases, especially when customers encounter appealing furniture across their daily activities. The objective is to close the gap between consumers seeing an item, and purchasing a similar one from IKURA.

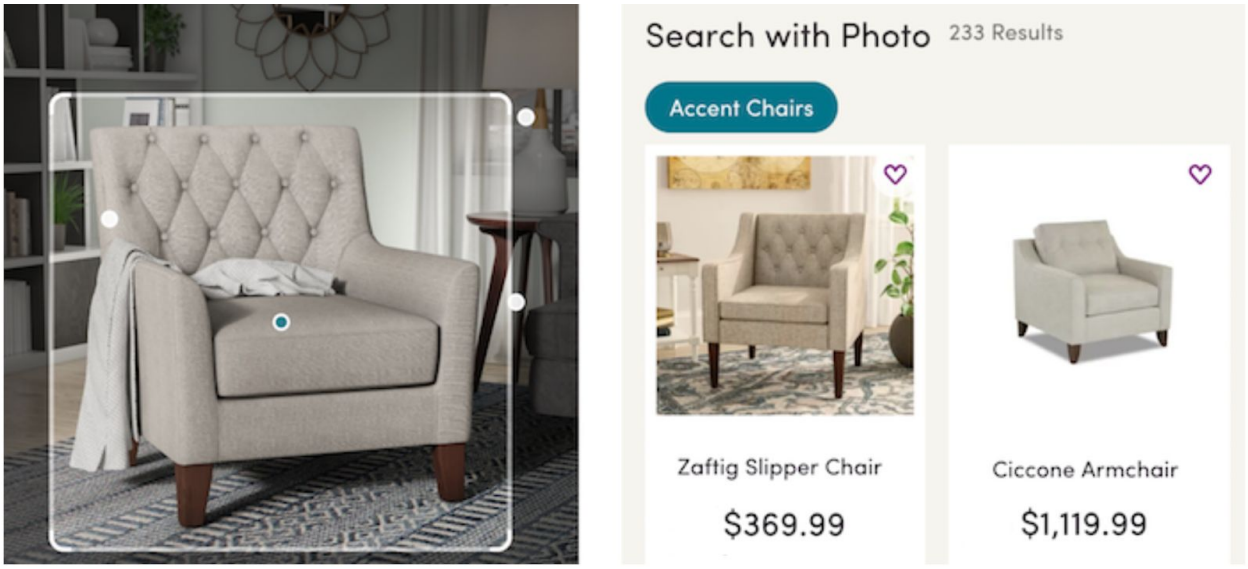

Figure 25: Visual Search Interface

8.2.5. Implementation & Analysis of Cost

iLEAD estimates that a budget of $200,000 is necessary for integrating AR functionalities into IKURA's application, over the span of 6 months. These calculations are performed based on development charges of $40 per hour. Each 3D model is expected to incur a one-time cost of $600, or 15 hours of developer charges. IKURA can begin with 200 3D models during the introductory phase, before gradually expanding to the rest of its collection.

According to Gartner, brands that adopt visual search can expect a 30% growth in digital commerce revenue within 3 years. iLEAD thus recommends a partnership with Visenze, a top market leader in visual search technology. Visenze has a 90% accuracy in finding matching or similar results, as evaluated by their quality assurance team and clients. Search queries are guaranteed to return results within one second. Furthermore, they have a proven track record in implementing solutions for companies such as Zalora, Uniqlo and Rakuten.

Visenze offers dynamic monthly subscription plans, based on the image database size as well as usage volume. This is expected to cost ~$30,000 per month and is easily scalable depending on customer receptiveness. With minimum fixed costs, this option would be of significantly lower risk compared to in-house development of visual search functionality.

9. Lack of Cyber Risk Management

In 2019, IKURA suffered a 10% revenue loss from cyberattacks due to the lack of standard security implementation. The lack of cyber risk management resulted in various system malfunctions and downtime throughout the organisation. IKURA's current security guidelines do not conform to the conventional industrial security standard. Additionally, IKURA has no formal

sets of security standards implemented, as there exist different sets of security policy and practices across divisions. The need for proper cyber risk management is especially crucial, given the recent cybersecurity attack.

iLEAD's Recommendation: National Institute Of Standard And Technology (NIST) Cybersecurity Framework (CSF)

9.1.1. Implementation

iLEAD recommends for the new cybersecurity team to implement NIST CSF to manage, identify and assess their cybersecurity risk, policies and practices. The proposed framework will ensure that IKURA coordinates and improves existing security policies and implementation based on the business mission and stakeholder needs.

Figure 26: NIST CSF Components

The CSF consists of three main components: Implementation Tiers, Framework Core and Profile (Figure 26). The CSF framework profile consists of two profiles: current and target. The initial profile indicates the cybersecurity outcomes that are currently being achieved while the targeted profile indicates the outcomes needed to achieve the desired cybersecurity risk management goals. Which in contrast to the CSF implementation tiers, helps determine if the cybersecurity risk management is integrated into IKURA overall risk management practices. Each component achieves a different objective to enable IKURA to identify key cybersecurity outcomes by the relevant stakeholders, support business requirements and communicate security mission priority within the organisation.

9.1.2. Expected Benefits

The NIST CSF pursuits coordination of implementing security standards, policies and practices throughout the organizations with a top-down and bottom-up approach (Figure 27).

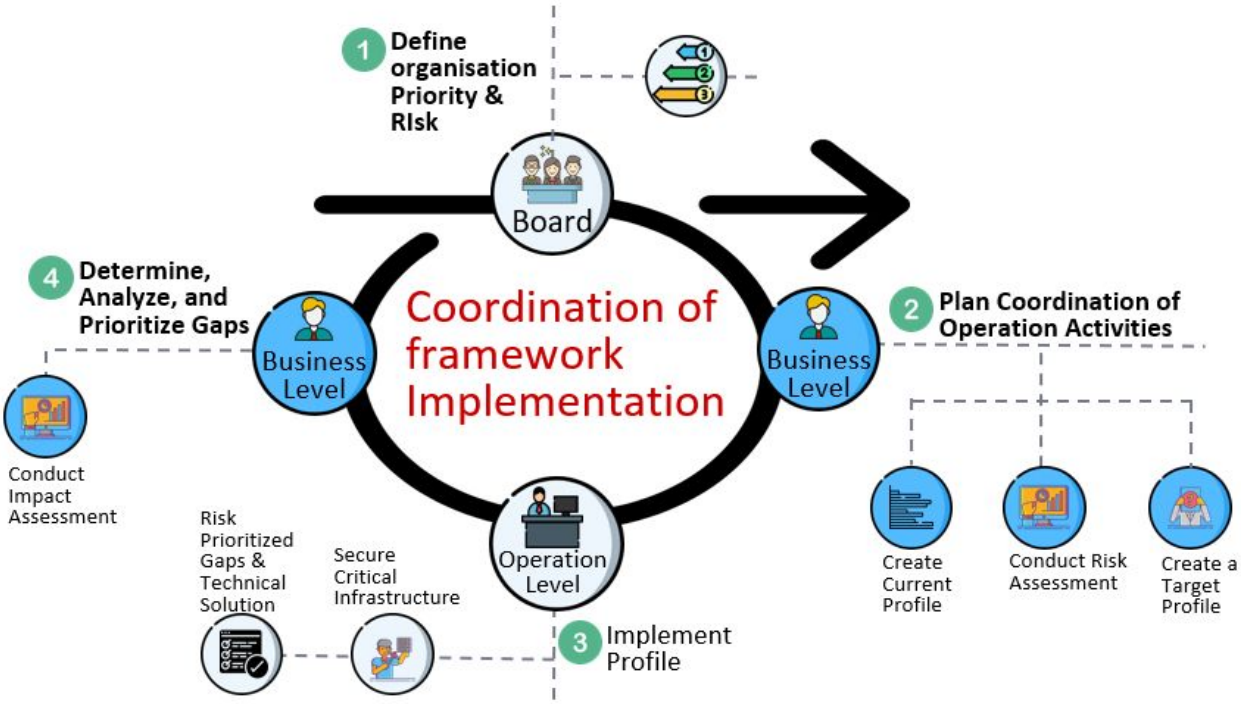

Figure 27: Coordination of Framework Implementation

NIST CSF empowers IKURA to have a flexible approach in ensuring that their security policies and implementation fulfil business requirements. In addition, the NIST CSF ensures IKURA to have a standard security framework across multiple divisions. NIST CSF is the most reliable framework up-to-date, as it is successfully adopted and implemented by big organizations such as Intel Corporation. Hence, the improvement in cyber networks will greatly benefit IKURA's IT system in terms of security and reliability.

10. Overview of Proposed IS Strategic Plan & Implementation

According to the solutions put forth, iLEAD has proposed a recommended timeline for the various implementations, as shown in Figure 28.

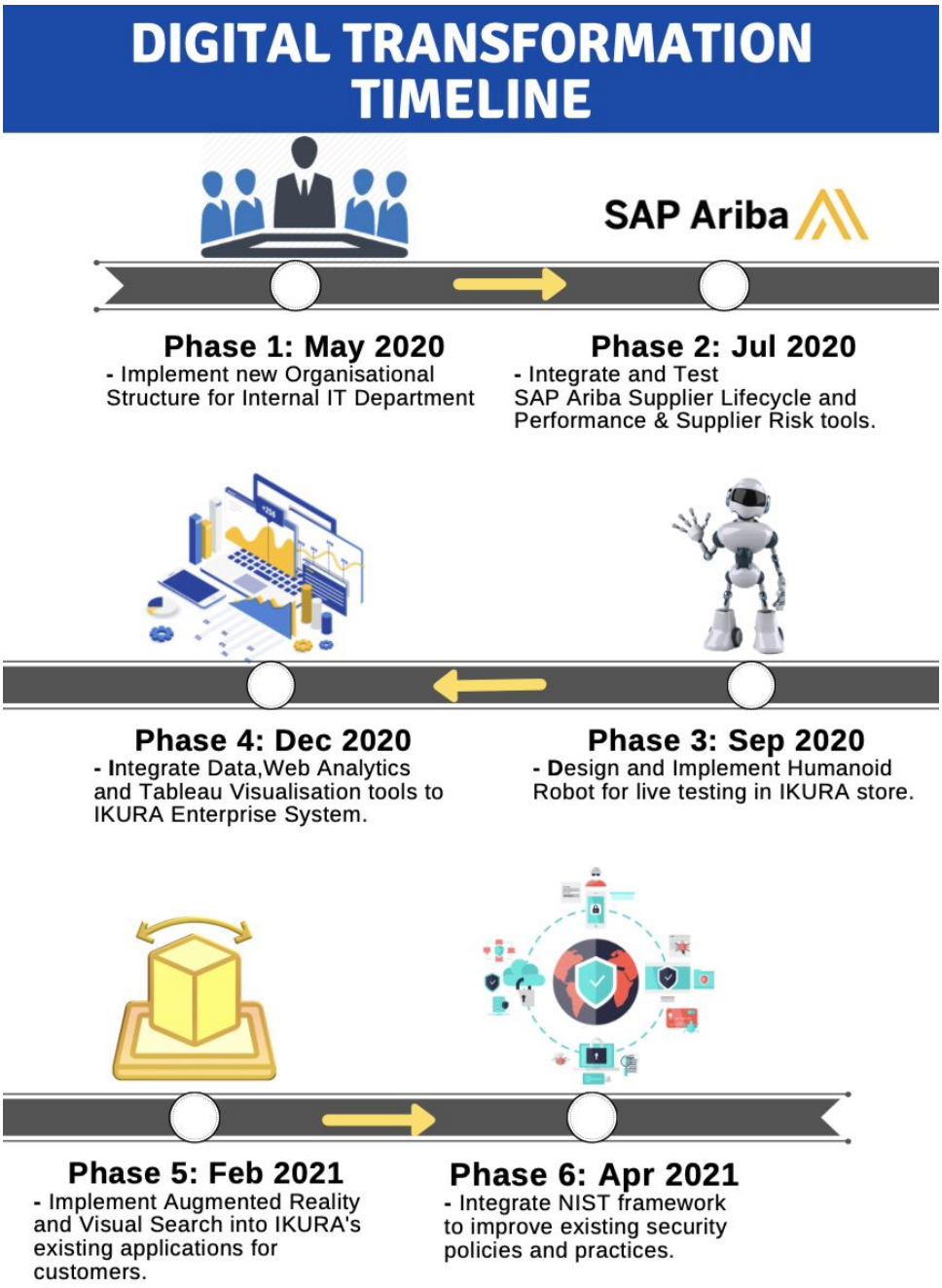

Figure 28: Proposed Digital Transformation Timeline

11. Change Management Plan

11.1. Managing Resistance from Employees

In general, the IT solutions, such as SAP solutions and AI Humanoid Robots, will require massive structural and cultural change by employees. In order to tackle this, iLEAD recommends IKURA to consider adopting the Lewin's Change Model, which consists of 3 key steps as shown in Figure 29.

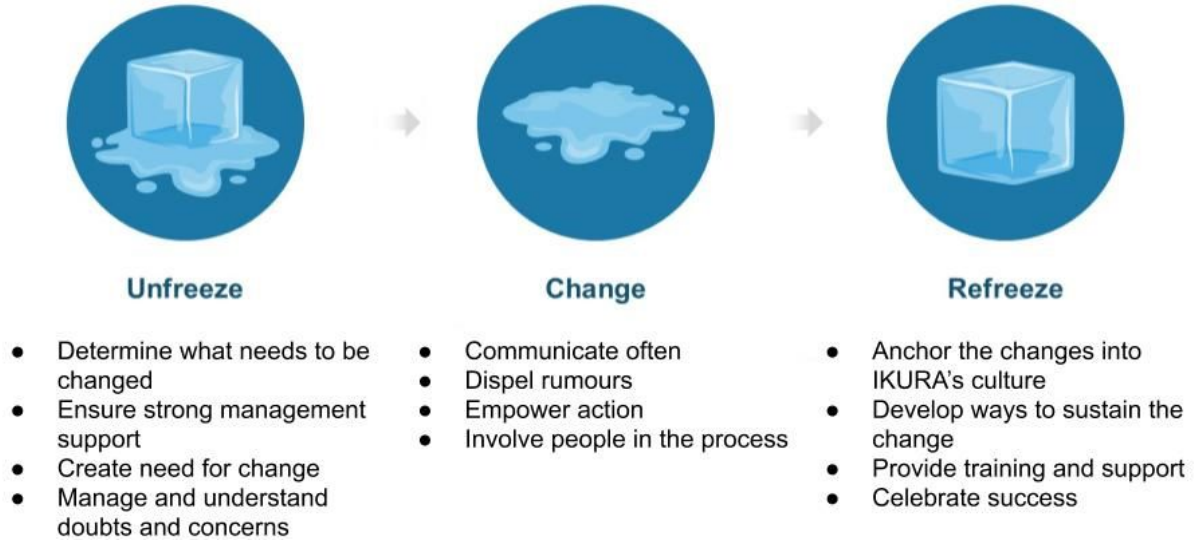

Figure 29: Lewin's Change Model

For AI Humanoid Robots, iLEAD recommends weekly workshops to be conducted to train employees to work with Pepper. However, resistance is anticipated from IKURA's frontline employees due to the fear of possible job displacement. Thus, these workshops should highlight the role of Pepper technology in improving employee productivity through clear and transparent communication, allowing Pepper to better assimilate into IKURA's working culture. With the participation and involvement of the frontline staff before the actual implementation, it would aid in alleviating the resistance against Pepper.

In terms of the cybersecurity framework, employees may not comply with the proposed security guideline due to the unfamiliar practices involved. As such, an educative and communicative approach would prove to be useful since misinformation is the main factor. Hence, the upper management can consider disseminating the new security guidelines and practices widely to IKURA employees through company emails and e-newsletter to raise awareness and provide necessary guidance.

11.2. Managing Resistance from Suppliers

iLEAD points out that the implementation of SAP Ariba measures may result in resistance from suppliers. Suppliers may be reluctant to adopt the same ERP system due to software costs, and the need to integrate it into their existing supply management system. To mitigate this issue, iLEAD propose a 12-months Suppliers Scheme. (Figure 30).

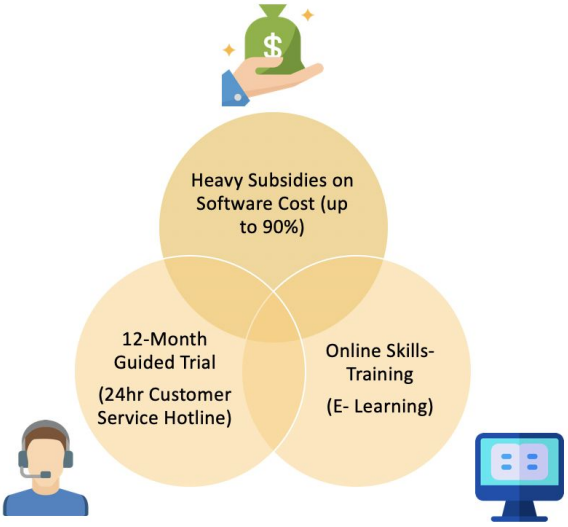

Figure 30: IKURA's 12-Months Suppliers Scheme

iLEAD recommends for IKURA to continuously engage with the suppliers, and even specifically customise the SAP Ariba solutions towards their supplier's current system. Overall, this scheme allows every supplier to easily integrate it into their system and gradually gain independence in terms of self-management.

11.3. Managing Resistance from Customers

Customers may find it hard to adjust to the new AR and Visual Search technologies. Thus, iLEAD recommends IKURA to demonstrate these functionalities in their regular roadshows. The objective is to raise awareness on these features, and also to guide customers in using them effectively.

When collecting consumer information for the data analytics platform, there may be resistance due to privacy concerns. Because of this, IKURA should adopt a negotiation and agreement approach which allows customers to opt-out of providing information deemed to be sensitive. By re-assuring customers of IKURA's effective data handling practices, they would be more receptive towards IKURA's efforts in personalizing user experiences.

12. Overall Benefits

iLEAD' digital transformation strategy directly addresses the root causes of IKURA's problems and brings in multiple benefits, as summarised in the figure below (Figure 31).

Problem	Organizational Structure Issues	Inefficient Global Supply Chain Management	Global Decline in Demand			Lack of Cyber Risk Management
			Poor Physical Store Experience	Mismatch of Global Demand and Supply	Lack of Competitive Advantage in Digital Sphere	
Solution	Change Organizational Structure	Implement SAP Ariba Supplier Lifecycle & Performance, SAP Ariba Supplier Risk	Adopt Humanoid Robots	Introduce Data Analytics Framework	Introduce AR Application and Visual Search	Introduce National Institute of Standard and Technology (NIST) Cybersecurity Framework (CSF)
Benefits	Improve IT workflow and importance in IKURA	Improve vertical integration with suppliers	Ability to gain customer insights		Immersive experience for customers	Improve coordination of existing security policies and implementation
	Clearer direction and roles for IT department	Unified system for centralised planning	Improved customer relationship through personalization		Better visualisation of product dimensions for customers	Ensure security of IT infrastructure
	Facilitates IT transformation	Decreased supplier risk	Refine customer perception of IKURA	Forecast new product trends	Promotes customer impulse buys	Improve organizational security communication workflow
	Improved communication for better company culture, spurring on innovation	Real time information sharing	Improve in-store shopping experience	Predict customer taste and preference of furniture	Lowers substitutability for other brands	Increase company preparedness for cyber incidents

Figure 31: Expected Benefits of iLEAD's Digital Transformation Proposal

13. Conclusion

All in all, iLEAD's proposed Digital Transformation Plan is expected to mitigate the current organizational and business problems faced by IKURA. Through the use of innovative IT solutions, IKURA will also be able to compete effectively with e-commerce furniture retailers and capture greater market share in the online market. Most importantly, with influential communication and collaboration with the executives of IKURA, the digital transformation plan will unite the company to work towards the shared vision.

Word Count: 5388

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