

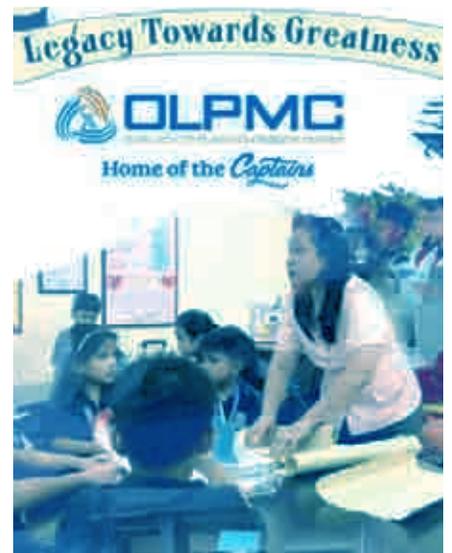
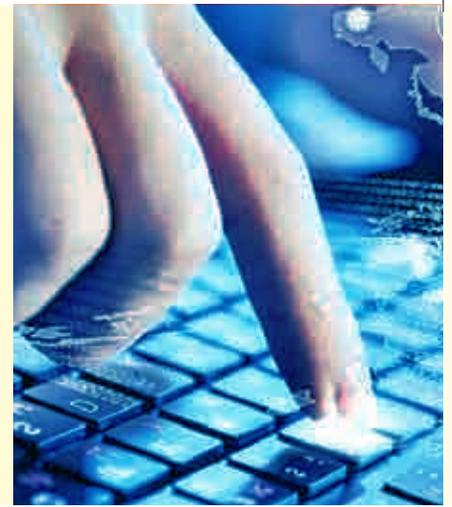


ATENEO DE MANILA UNIVERSITY
GRADUATE SCHOOL OF BUSINESS
ATENEO STUDENT BUSINESS REVIEW VOL. 7 NO. 1



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MANAGING THROUGH #IT



Page Inbox Notifications Insight

All AGSB Students and Alumni are welcome!

4.4.2019 6 PM - 9 PM Auditorium, Ateneo School, Excelsior St.

ADD TO CART CHECK OUT
THE NEW TRENDS IN E-COMM



SPEAKER
Professor Xiaoyun (Jack) Xu
Research Professor of Department of Information Technology, AGSB

A former professor at Peking University, he is also an expert in Industrial Engineering and Management. He is a core member of the largest E-Commerce Innovation Inc. (Alibaba Group, JD.com, Suning.com and others).

The New Trends In
E-commerce Forum

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SCAN ME!



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Message from the

Dean



In a world that has become increasingly riven with pessimism and despair brought about by the global health and economic crisis, it is energizing to see the rays of positivity and hope emanating from the work featured in this double issue of *Techne*.

The 10 articles featured here embody the AGSB mission of academic excellence, guided by principles and imbued with a sense of service as they apply management skills to solve some of the problems that businesses and society face on several fronts.

To the faculty and students who have made this issue of *Techne* possible, my sincere congratulations and thanks.

To those who will read this issue, I trust that you would benefit from the insight presented by the 42 students and their faculty advisers, who offer technology and quantitative methods applications to light the way with practical solutions.

Jowett Cecilio F. Magsaysay, MBA, PhD

Dean

Ateneo Graduate School of Business

Message from the

Operations and IT Department Head



Congratulations to the professors and students of the Department of Operations and IT (DOIT) for its resilience in coming out with the Techne 8 & Techne 9 issues especially during these trying times.

Having taken two years to complete this double issue, the ten papers on Operations, Management Science and IT give readers a chance to compare how it was and how it should be before and during the pandemic.

With most of us working or staying at home, it is an appropriate time to have a glimpse of how our students, guided by their professors, have applied what they learned from the Ateneo Graduate School of Business (AGSB). The papers deal with various business operations applications such as supervised machine learning, total quality assurance, hospital ambulatory services, fitness center, and school enrolment attrition, among others.

I wish to thank all our friends in business and the academe for their continuous patronage as well as to our former Dean Rudy Ang and our new Dean Jet Magsaysay for their solid support of our department's initiatives towards achieving AGSB's lofty goals.

On behalf of my colleagues in DOIT and AGSB, thank you!

Ralph Ante
Head, Department of Operations and IT
Ateneo Graduate School of Business

Message from the Editor

The stay at home mandate brought by COVID-19 provided plenty of time to reflect on many things. One of them is looking back a decade ago, to 2010, which marked the planting of the seed to an idea. Then AGSB Dean Albert Buenviaje thought, "For a graduate school of business that emphasizes relevance, it is worth noting that the student papers in *Techne* clearly demonstrate the practical application of the quantitative methods learned in class to the decision making required of managers in different business setting." Thus, the *Techne* meme was born with the mimicked theme: Managing through Numbers.

I am sure everyone agrees that "*Techne*" is a suitable title for this publication. But what exactly does *Techne* mean? We need to pause to find out. In Wikipedia, it is derived from the Greek word τέχνη often translated as "craftsmanship", "craft", or "art". Whoa! Not quite. From the Stanford Encyclopedia of Philosophy, we find:

Epistēmē, the Greek word most often translated as knowledge, and *technē* translated as either craft or art. These translations, however, may inappropriately harbor some of our contemporary assumptions about the relation between theory (the domain of 'knowledge') and practice (the concern of 'craft' or 'art'). In our era, the paradigm of theory is pure mathematics with no obvious application to practical problems of such as engineering. At the other end of the spectrum is craft. Carpentry, for example, is so enmeshed in material application that it resists any general explanation but must be learned by practice. As a consequence, theory and practice may seem irreconcilable. Outside of modern science, there is sometimes skepticism about the relevance of theory to practice because it is thought that theory is conducted separate from the facts, the province of practice, that it can lose touch with them. Indeed, at the level of practice, concrete experience might be all we need. Finally, if the practical is widened to include not only the physical world but also the way we lead our lives, this poses another problem to the relation between theory and practice. Within science, theory strives for a value-free view of reality. As a consequence, scientific theory cannot tell us how things should be or how to lead our lives. This contrast presents another aspect of the difference between theory and practice; pure theory is removed from ethical investigation and the practice of living requires it.¹

Thus, in reality, we need to put episteme and techne together to fit what we want to achieve. But using techne alone is unique as it is easier to put to memory and for recall.

Fast forward to 2020, after publishing seven issues covering 46 student papers, *Techne* has become an institution associated with application of great operations management tools, optimization possibilities, simulation exercises, and now, beginning with this issue, stories around IT and data analytics. We have indeed gone a long way.

We are excited to deliver this publication to you because it has many firsts. Commencing in July 30, 2018, it took close to two years to put it together. Extensive peer reviews were conducted on 23 papers by 17 professors. Ten papers were chosen and presented as a double issue with *Techne* 8 focusing on IT and *Techne* 9 putting emphasis on quantitative papers. The chosen papers collectively written by 41 AGSB students provide a wide range of subject matters: supervised machine learning, total quality assurance, school enrolment attrition, hospital ambulatory services, loan turnaround, hemodialysis, processed meats, fitness center, pharmaceuticals, and mobile phones. As the coronavirus pandemic caught up with this *Techne* publication, printing layout was completed totally through work from home.

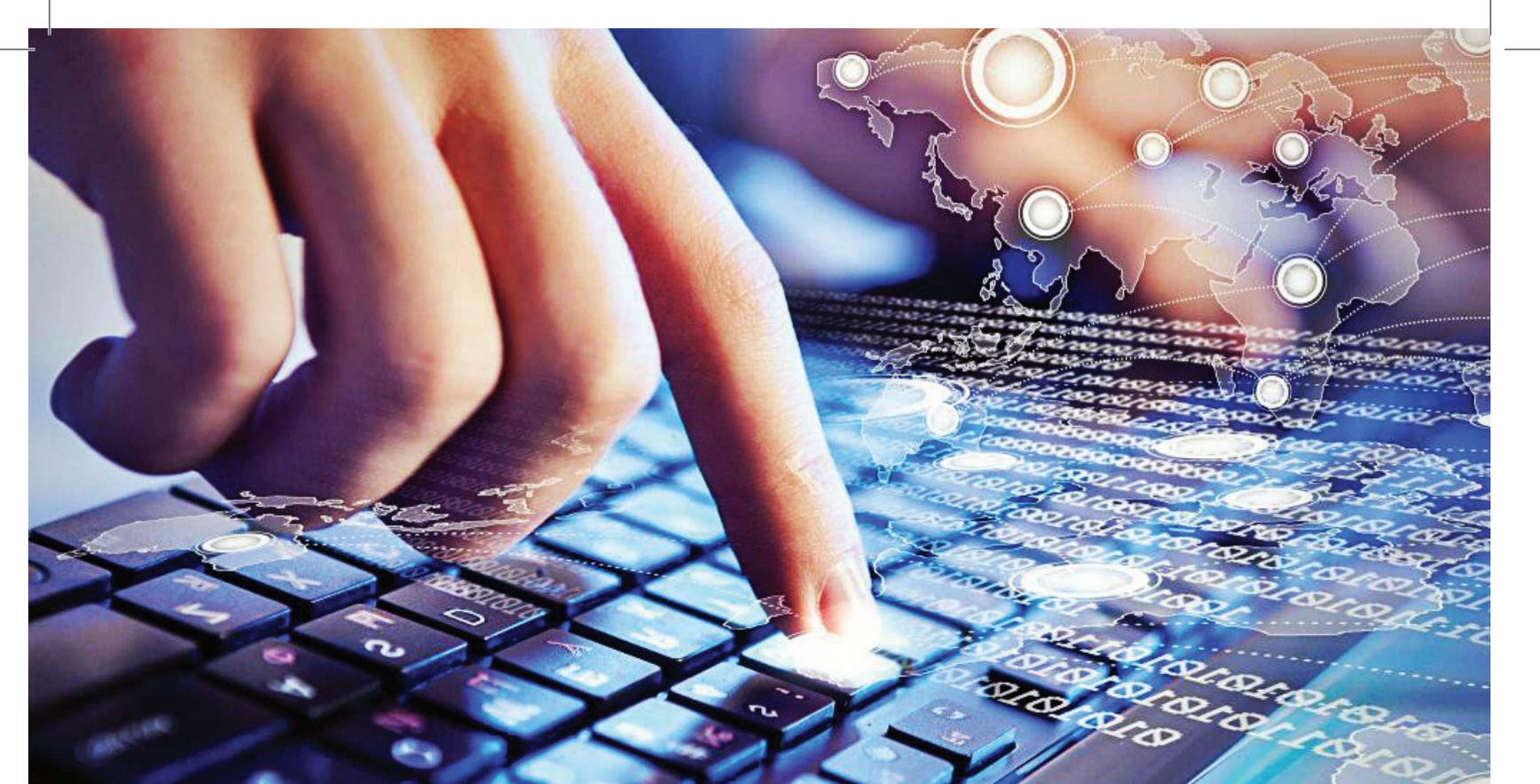
We hope you will find the materials we have put here together fit your interests and will lead to ideation.

Ed Legaspi

Editor

Techne: Managing through Numbers
Ateneo Graduate School of Business

¹ Parry, Richard, "Episteme and Techne", The Stanford Encyclopedia of Philosophy (Summer 2020 Edition), Edward N. Zalta (ed.), forthcoming URL = <<https://plato.stanford.edu/archives/sum2020/entries/episteme-techne/>>.

A hand is shown typing on a laptop keyboard. The background is a digital, blue-toned world map with glowing nodes and lines, suggesting global connectivity and data. The overall aesthetic is futuristic and technological.

Predictive Analytics for Employee Turnover Using Supervised Machine Learning Model

Ruben Benitez Jr. • Joy Cuison • Desiree David

Technology's evolution plays a pivotal role in the way companies operate in an increasingly digital, dynamic and globalized environment. The information revolution, internet of things, e-commerce, evolving consumer trends, and shifting job markets trigger companies to rethink their strategies and invest in digital transformation to streamline process, improve market response, and compete effectively. Businesses are driven to adopt modern tools and employ data science to gauge not just consumer behavior but also organizational behavior.

The Mckinsey report made in collaboration with the World Economic Forum projected that by 2025, the fourth industrial revolution will create up to US\$3.7 trillion in value. Evidently AI, Internet of things,

additive manufacturing and advanced robotics have contributed to net productivity's increase.

And yet, employees remain to be the lifeblood of any organization despite modern day technologies' aid in boosting productivity and company growth. Thus, companies are redefining their strategies on employee retention in response to shifting job markets and preferences.

In industrialized regions like the NCR (National Capital Region), for instance, a negative labor turnover of 4.61% (accession rate is at 1.87% whereas separation rate is at 6.48%) was recorded in fourth quarter of 2017 for agriculture, forestry and fishing sector. High attrition may pose a threat to the sustainability of the businesses in the said area as more jobs shift to the service

sector. Moreover, skillset requirements have begun to evolve with more digital-based businesses developing everywhere, thus tightening labor market competition (Bersales, 2018).

Companies use certain statistical techniques to evaluate the amount of available employee data since it is becoming essential to understand work and environmental factors that contribute to high attrition. This statistical technique may be applied through machine learning models. This will help organization perform a more efficient approach to predicting employee behaviour.

This paper shows how human resource departments can possibly predict employee turnover by using machine learning model and neural network. Furthermore, it illustrates how company can benefit from artificial intelligence in making business decisions effectively. To demonstrate, fictional data set was used covering 1207 employees for analysis. Dataset includes factors that may correlate with attrition rate such as job level, job satisfaction, leaves taken, age, workplace environment, and proximity of workplace to one's home.

Supervised learning was the main algorithm used for this study with TensorFlow as the platform and python as the script language. The machine was trained using variables that will predict employee's probability of attrition. The sample data tested yield an 83.08% accuracy.

Machine Learning and Neural Network Context

More businesses are starting to largely invest in getting their processes or systems to adopt artificial intelligence (AI). As Clive Humby, UK Mathematician and Chief Data Scientist at Starcount Ltd. stated, "data is the new oil". AI application comes in when a machine mimics cognitive human functions such as problem solving and learning. Businesses achieve AI efficiently by

adopting Machine Learning approaches through the use of available mathematical algorithms which in turn minimizes reliance on complex rules and decision trees.

Machine Learning (ML) is defined as "a field of computer science that uses statistical techniques to give computer systems the ability to "learn" with data, without being explicitly programmed" (Samuel, 1959). Utilizing the machine learning approach allows organizations, especially data-driven ones, to generate predictive and prescriptive analysis instead of just pure descriptive analysis.

The concept behind this area is called Deep Learning, a subset of Machine Learning. This particular field, according to Brownies (2016), is focused on algorithms that mimic the human brain's function and structure referred to as artificial neural networks. Neural networks are able to interpret sensory data and recognize patterns through labelling or clustering of raw input as well as machine perception. Patterns identified by neural networks are numerical in nature and contained in vectors into which all real-world data such as text, images, sound or time series should be translated. ("Introduction to Deep Neural Networks", n.d)

Kay (2001), in his article on "Artificial Neural Networks" cited that the first artificial neural network (ANN) called, Perceptron, was invented in 1958 by Frank Rosenblatt (*inspired by earlier work of Warren McCulloch and Walter Pitts*) to model how the human brain process visual data and recognize objects. The usefulness of pattern-recognition and learning capabilities of ANN was magnified later on to address problems that can't be solved with either standard or statistical methods of calculation. Use of ANNs eventually became widespread by the late 1980s.

Jones (2017) from IBM depicts a basic model on how neural networks operate. A neural network, modeled after interconnected neurons in the brain,

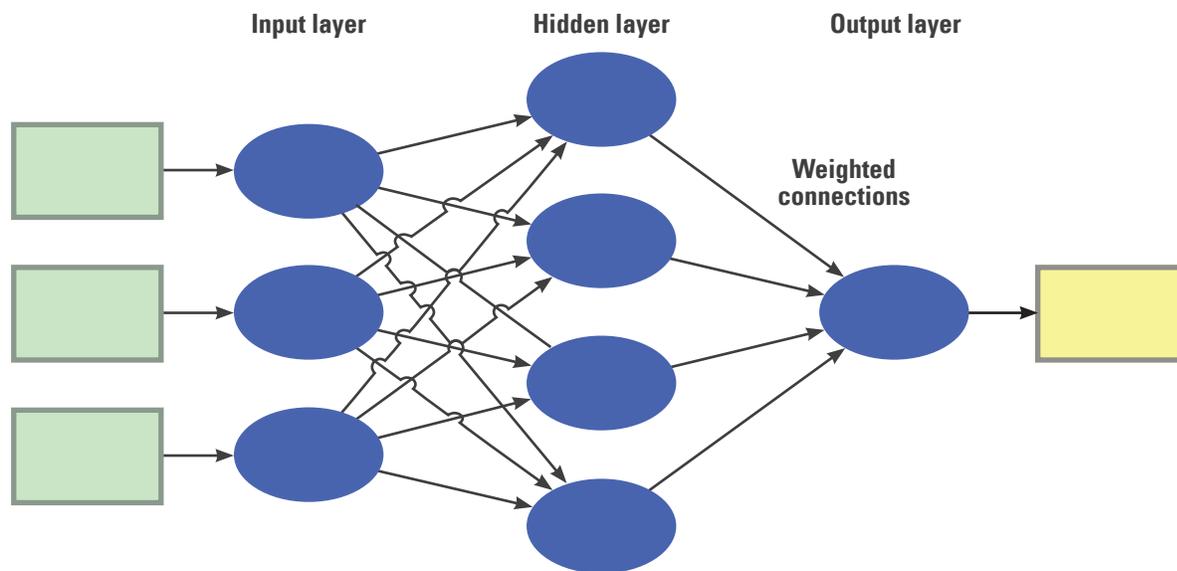


Figure 1 Neural Network Model

processes an input vector to a resulting output vector. He further states that “the model consists of layers of neurons interconnected through weights that alter the importance of certain inputs over others. Each neuron includes an activation function that determines the output of the neuron (as a function of its input vector multiplied by its weight vector). The output is computed by applying the input vector to the input layer of the network, then computing the outputs of each neuron through the network (in a feed-forward fashion).” This concept is illustrated in the diagram in Figure 1.

In addition, these neurons are not only interconnected but also arranged into different layers with one or more layers sandwiched in between the input layer and the output layer. It would be difficult, if not impossible, to determine exactly the way data flows given the said structure (Kay,2001).

Type of Machine Learning to be applied in this Study

The key approach on supervised learning machine uses these neural networks. The algorithm utilizes training data and human feedback to determine the relationship of the given input to a given output.

This model, according to Jones (2017), includes training a function created through a data set to be used to unknown data to satisfy predictive analytics. The objective is to create the function that can be applied generally to data that is not yet seen.

The study has used Deep Neural Network classifier method with the following topology:

1. Three Hidden Layers with 10, 20,10 nodes respectively
2. Input layer, and
3. Output layer

TensorFlow’s DNN Classifier was used to predict results given some inputs. The Machine learning model has 17 features, namely:

1. Age
2. Gender
3. Marital Status
4. With Children
5. Vacation Leaves Taken in the last 12 Months of Employment
6. Proximity/Distance from Home
7. Job Level
8. Education
9. Workplace Environment Satisfaction
10. Job Satisfaction

11. Number of Companies Worked for Prior Current Company
12. Overtime
13. Total Working Years
14. Work Life Balance
15. Years At the Company
16. Years In Current Role
17. Years Since Last Promotion

These features are labeled elements and will be used to train the machine learning model. Elements in the dataset are normally extracted from real world data with correct labels which are used to test the model for accuracy. This method is also in conjunction with the supervised machine learning algorithm as the model is trained with labeled features and is expected to predict some expected output given some inputs.

The testing and building of mapping functions, according to Jones (2017), are broken down using the following steps:

1. Data set is classified into two sample types: Training and Test Data. These have test vectors or inputs and one or more output value.
2. Training data set should be trained using the mapping function until it reaches the desired level of accuracy in achieving output. This has to be performed on each training sample where encountered errors will be used to change the mapping function.
3. Testing against test data should be performed on the trained mapping function. This data is not yet used during the training. This way, test data will provide a suitable measure to determine how the mapping function generally performed to unknown data.

In the context of predicting employee turnover, Supervised Learning algorithm (classification method) is the type of machine learning model to be applied.

Methodology

To create a machine learning model, a developer needs to observe five key steps:

1. Gathering data from various sources

The amount of data required to be collected depends on the complexity of the problem you are attempting to forecast as well as the learning algorithm's complexity. It depends on the available amount of data and the amount you want to use. There is no standard data range but a minimum of 3-months' worth of data is a good number to forecast a reasonable result.

In our case, we used the IBM dataset (available publicly at <https://www.ibm.com/communities/analytics/watson-analytics-blog/hr-employee-attrition/>) and built our own machine learning model to predict the probability of attrition.

2. Cleaning data to achieve homogeneity

Data collected should be cleansed to attain uniformity and accurate results. As ML is based on patterns such as number of leaves taken, tardiness occurrence, proximity of employee's domicile, and tenure in the company, having a uniform and homogeneous data will yield a higher percent of accuracy.

The data also updated with int32 values; for example, "YES" values were modified to 1 while "NO" were modified to 0. This would make the training dataset become machine readable. The dataset was also divided into training dataset and test dataset to measure the model's accuracy prior to feeding the input data for prediction. As soon as the training and test datasets were available, we were ready to feed values to our ML model for training purposes.

3. Model Building – Selecting the right ML algorithm

There are three types of machine learning algorithms namely Supervised Learning, Unsupervised Learning, and Reinforcement Learning.

Supervised Learning consists of an outcome variable (dependent variable) predicted based on independent variables. Using these variables, mapping will be done from input to output and machine will be trained to achieve an outcome within the desired level of accuracy. Supervised learning will be the chosen algorithm for this study.

Unsupervised Learning, on the other hand, does not have any desired outcome to estimate. Usually you only have the input data (independent variable) and no historical data for the dependent variable. Unsupervised learning can be used for either clustering (discovering the inherent grouping the data) or association (discovering rules that describe majority of your data) problems.

Lastly, Reinforcement Learning is training your machine to make a specific decision. The machine is repeatedly trained to make an accurate business decision using historical data and the trial and error process.

TensorFlow was used as the platform to further create a comprehensive supervised learning algorithm. TensorFlow is defined as end-to-end open source platform for machine learning. It makes it easy to create machine-learning models since TensorFlow offers APIs for mobile, web, desktop, and cloud. The

high-level Keras API offers building blocks to create and train deep learning models. It is widely used for research and experimentation and allows writing custom-layers, forward passes, and training loops with auto-differentiation. Moreover, it can train large models on multiple machines in a production environment. It also provides a collection of pre-made estimators to implement common ML algorithms. (TensorFlow, 2019)

The algorithm used by the model was supervised learning; particularly the classification method. DNN Classifier of TensorFlow is used to train, evaluate for accuracy, and predict. The required parameters in order to do this are cleansed training and test datasets, feature columns (these are the 17 features previously mentioned), and sample inputs for prediction.

4. Gaining Insights from the model's results
Insights on the result will depend on the user's department function. For managers, result on turnover study will be used to identify employees requiring coaching action plan. For human resource team, result will be used to identify areas for improvement regarding attrition rate.
5. Data Visualization – Transforming results into the visual graphs

This is a suggested process as visual graphs help end-users easily see the relationship between independent and dependent variables. We used a data visualization



The illustration summarizes the methodologies used:

tool called TensorBoard which helped us understand data using graphs presented in the board. The learning progress was shown as well to help us understand whether the model is learning at the rate expected.

Conclusion

The impact of machine learning and artificial intelligence is expected to be felt significantly in the next 5-10 years. Their benefits will further compel businesses to adopt the technology. Our attrition prediction, for instance, should be improved in the future to help company decision-makers make wiser decisions.

Building models for prediction though ML will lessen the need for complex decision trees and mathematical algorithms as previously illustrated. Using the TensorFlow as the main ML platform and python as the medium for coding the models, the group built a ML model that potentially predicts attrition risk using historical data given a parameter set. The group utilized the TensorFlow DNN Classifier model for training, evaluation, and prediction. We have also used the IBM HR information on training and testing dataset for accuracy. In addition, the model is flexible and can be modified for other prediction requirements.

At the end of the day, data is still the ultimate key. Machine learning modeling is easy as long as one has enough data to work with. Feature engineering on data is also a crucial requirement to make machine learning models predict more accurately. This will remain a human function. There will be more functions requiring human skills come the AI era; including feature engineering, critical thinking, and architecture to name a few. These are higher level skills which are not yet recognized today but will be in demand in the future.

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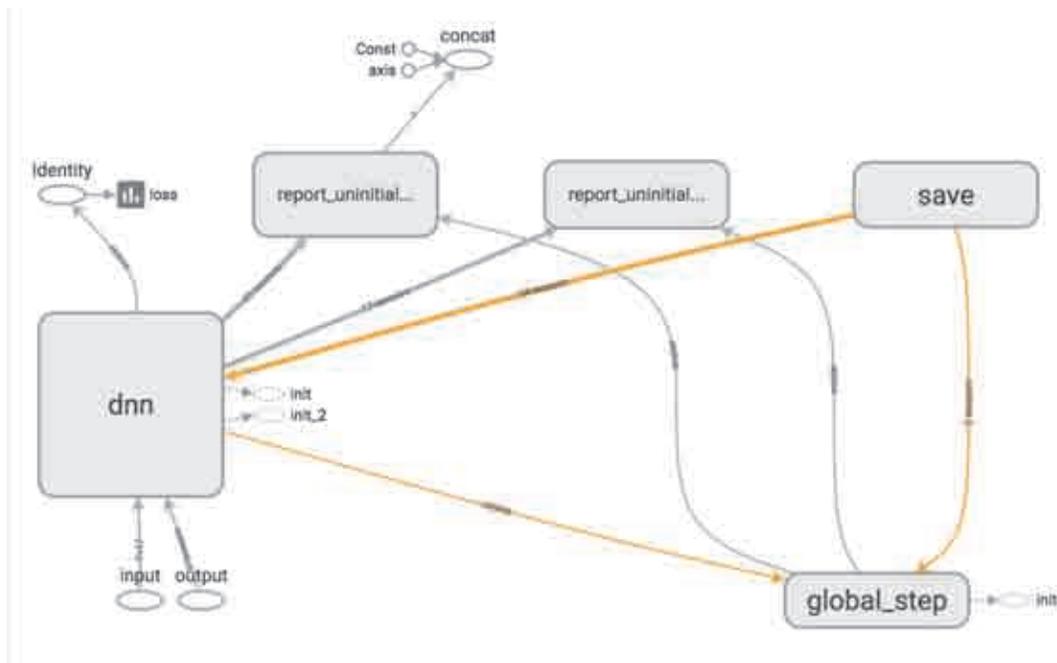
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Data Visualization using Tensorboard



Machine learning code using Tensorflow and Python.

```

1
2 from __future__ import absolute_import
3 from __future__ import division
4 from __future__ import print_function
5
6 import os
7
8 import numpy as np
9 import tensorflow as tf
10
11 os.environ['TF_CPP_MIN_LOG_LEVEL']='2'
12 tf.logging.set_verbosity(tf.logging.INFO) #enable logging info
13
14 # Data sets
15 TRAINING = os.path.join(os.path.dirname(__file__), "IBMDData_Training.csv")
16 TEST = os.path.join(os.path.dirname(__file__), "IBMDData_Testing.csv")
17
18
19 def main(UNUSED_argv):
20     # Load datasets. Headers will define the sides, e.g. 10,4 states that 10 rows and 4 columns.
21     training_set = tf.contrib.learn.datasets.base.load_csv_with_header(
22         filename=TRAINING, target_dtype=np.int32, features_dtype=np.float32)
23     test_set = tf.contrib.learn.datasets.base.load_csv_with_header(
24         filename=TEST, target_dtype=np.int32, features_dtype=np.float32)
25
26     # Specify that all features have real-value data
27     feature_columns = [tf.contrib.layers.real_valued_column("*", dimension=17)]
28
29     # Set up metrics
30     validation_metrics = {
31         "accuracy":
32             tf.contrib.learn.MetricSpec(
33                 metric_fn=tf.contrib.metrics.streaming_accuracy,
34                 prediction_key=tf.contrib.learn.PredictionKey.CLASSES),
35         "precision":
36             tf.contrib.learn.MetricSpec(
37                 metric_fn=tf.contrib.metrics.streaming_precision,
38                 prediction_key=tf.contrib.learn.PredictionKey.CLASSES),
39         "recall":
40             tf.contrib.learn.MetricSpec(
41                 metric_fn=tf.contrib.metrics.streaming_recall,
42                 prediction_key=tf.contrib.learn.PredictionKey.CLASSES)
43     }
44 }

```

```

43 # enable validation monitor
44 validation_monitor = tf.contrib.learn.monitors.ValidationMonitor(
45     test_set.data,
46     test_set.target,
47     every_n_steps=50, metrics=validation_metrics,
48     early_stopping_metric="loss",
49     early_stopping_metric_minimize=True,
50     early_stopping_rounds=200)
51
52
53 # Build 3 layer DNN with 10, 20, 10 units respectively.
54 classifier = tf.contrib.learn.DNNClassifier(feature_columns=feature_columns,
55     hidden_units=[10, 20, 10],
56     n_classes=2, model_dir="/tmp/DNNdata", config=tf.contrib.learn.RunConfig(save_checkpoints_secs=1))
57
58
59 # Fit model.
60 classifier.fit(x=training_set.data,
61     y=training_set.target,
62     steps=2000, monitors=[validation_monitor])
63
64
65 # Evaluate accuracy.
66 accuracy_score = classifier.evaluate(x=test_set.data,
67     y=test_set.target)["accuracy"]
68
69 print('Accuracy: (f)'.format(accuracy_score))
70
71
72 # Age Gender MaritalStatus With Children Is_Taker_in_the_last_12_months_of_employment Proximity/
73 Distance_from_Home Joblevel Education Workplace_Environment_Satisfaction JobSatisfaction Num_Companies_worked_for_Prior_Current_Company Overlook Total
74 Working_Years Work_Life_Balance Years_At_the
75 Company Years_In_Current_Role Years_Since_Last_Promotion
76
77 # Input data
78 input_data = np.array(
79     [[54,0,2,1,3,1,3,2,2,4,3,1,14,1,6,4,0]], dtype=float)
80     #([40, 0, 40, 50]), dtype=float)
81
82 y = list(classifier.predict(input_data, as_iterable=True))
83
84
85 print('Predictions: {}'.format(str(y)))
86 print('Accuracy: (f)'.format(accuracy_score))
87
88
89 if __name__ == "__main__":
90     tf.app.run()
91

```

Sample output with given parameter set resulting to 87.69% accuracy level predicting to negative attrition risk.

Employee Turnover

Age: 54
 Gender: Male Female
 Marital Status: Single Married Divorced
 With Children? No Yes
 VL Taken in the last 12 months of Employment: 3
 Distance From Home (km): 1
 Job Level: 3
 Education: 2
 Workplace Environment Satisfaction: 2
 Job Satisfaction: 4
 # Companies Worked: 3
 Overtime: Yes No
 Total Working Years: 14
 Work Life Balance: 1
 Years at the Company: 6
 Years in current Role: 4
 Years since last Promotion: 0

Accuracy: 87.69%
 Attrition: No

Sample output with given parameter set resulting to 84.62% accuracy level predicting to positive attrition risk.

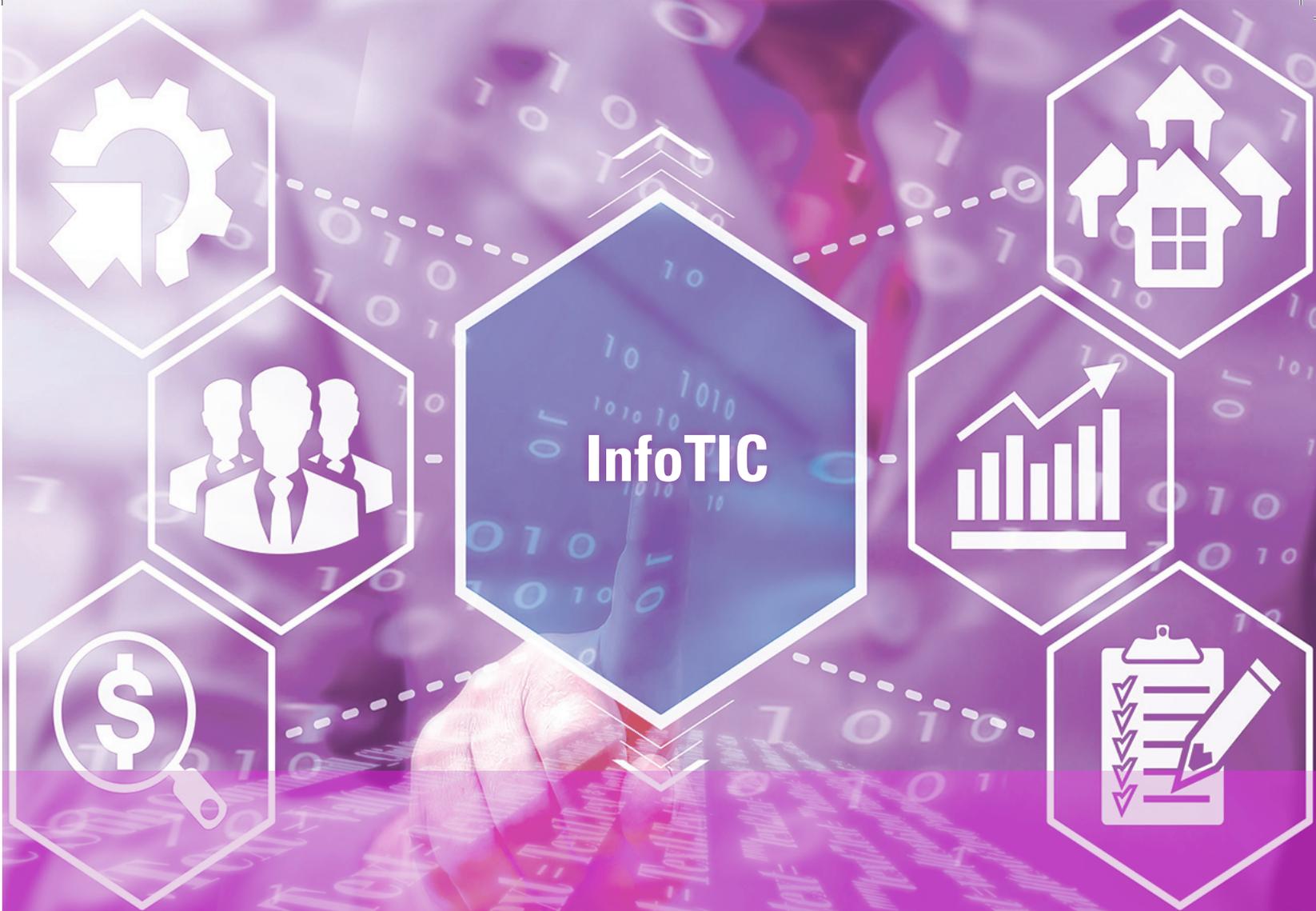
Employee Turnover

Age: 41
 Gender: Male Female
 Marital Status: Single Married Divorced
 With Children? No Yes
 VL Taken in the last 12 months of Employment: 8
 Distance From Home (km): 1
 Job Level: 2
 Education: 2
 Workplace Environment Satisfaction: 1
 Job Satisfaction: 4
 # Companies Worked: 8
 Overtime: Yes No
 Total Working Years: 20
 Work Life Balance: 1
 Years at the Company: 6
 Years in current Role: 4
 Years since last Promotion: 0

Accuracy: 84.62%
 Attrition: Yes

Accuracy





**Francesca Angelou Descalzo • Glaiza Mae Guevarra • Michael Jason Manzo
Erika Pangan • Evena Flor Santos**

InfoTIC is a leading Total Quality Assurance provider to industries worldwide. Its network of more than 1,000 laboratories and offices and over 43,000 people in more than 100 countries, delivers innovative and bespoke Assurance, Testing, Inspection and Certification solutions for its customers' operations and supply chains. Companies around the world have depended on InfoTIC for more than 130 years to help ensure the quality and safety of their products, processes and systems.

InfoTIC, as a Total Quality Assurance provider, goes beyond testing, inspecting and certifying products. It provides a systemic approach to supporting all areas of Quality Assurance including R&D,

raw materials sourcing, components suppliers, manufacturing, transportation, distribution and retail channels, and consumer management.

It delivers total Quality Assurance expertise 24 hours a day, 7 days a week with its industry-winning processes and customer-centric culture ensuring products meet quality, health, environmental, safety, and social accountability standards for virtually any market around the world. It holds extensive global accreditations, recognitions, and agreements, and its knowledge of and expertise in overcoming regulatory, market, and supply chain hurdles is unrivalled.

InfoTIC can sharpen customer's competitive edge through:

- » Reliable testing and certification for faster regulatory approval
- » Rapid and efficient entry to virtually any market in the world
- » Total Quality Assurance across the supply chain
- » Innovative leadership in meeting social accountability standards
- » Reducing cost and minimizing health, safety, and security risks
- » Reputation founded on credibility and excellence

InfoTIC does not have one product as its HRIS (Human Resource Information Systems). Each country has autonomy to decide the best HRIS based on their infrastructure and privacy policies. This study will only cover InfoTIC Philippines site including its branches nationwide.

Current Technology

As the “always-on” Information Age evolves and

products and technologies converge together, companies like InfoTIC need to exploit next-generation devices faster than ever. They need to minimize risks involving products, processes, people, and profitability. Table 1 shows the products and applications currently utilized.

Technological Environment

The transformation in the way data is collected, recorded, retrieved, and utilized will help InfoTIC come up with groundbreaking business strategies. This innovation will not just improve InfoTIC’s efficiency but will also create awareness of the transformational phase and come up with different approaches to drive growth for their company.

Technology has also enabled businesses like InfoTIC to analyze available data to in order to produce meaningful conclusions and make informed decisions. Data analytics will play a key role in InfoTIC’s growth, employee retention, and success through stronger employee and customer focus.

Table 1. Products and Applications of InfoTIC

Products / Applications	Details
10X Way	InfoTIC's enterprise learning management system
Agreements Database	Central repository for Customer Agreements and Contracts for the Commodities global business lines.
Asset Bank	Shared Group library of approved images (both owned and licensed), documents, templates, fonts and other digital assets available for use in brochures, web sites, and other communications channels.
ASTRA	Custom end-to-end Inspection Management and Certificate Generation application.
Microsoft Power BI	Turns data into real intelligence that provides insight and helps drive business decisions.
CCES (Cross Check Evaluation System)	Laboratory auditing application that: <ul style="list-style-type: none"> • measures lab performance over time • identifies declining performance compared to historical trends • manages corrective actions It provides management dashboards to provide insight into performance trends and outstanding corrective actions.

Products / Applications	Details
Claims Database	Web application that manages the central repository of InfoTIC claims for Compliance teams. It provides details on submitted claims and the ability to generate reports for distribution.
Clarity	Tool specially designed to support IT teams in the following areas: <ul style="list-style-type: none"> • Product and project management • Task management • Staff utilization and load balancing across projects and teams • Unified time tracking for projects • Organizational monitoring to measure IT effectiveness • Centralized data for powerful dashboards and views
Create or Update an Account	Create a new user account in Active Directory, which establishes the ability to log in to the InfoTIC network and provides access to e-mail and other applications.
Datalink	Customer facing portal for: <ul style="list-style-type: none"> • Application submission • Status tracking • Report searching and retrieval • Report review • Report upload for 3rd party labs • Supplier performance analysis • Document sharing
8X8 cloud hosted phone	InfoTIC's cloud hosted global phone system where InfoTIC employees can make phone calls and manage voicemails using a Softphone or physical desk phone.
Hosted Microsoft O365 with Exchange ActiveSync	Allows employees to send and receive messages with or without attached files to anyone with an e-mail address.
eReporting Pro	Captures inspection data and create customer specific reports offline
eSignature	InfoTIC has partnered with DocuSign to use their CoSign platform for electronic signatures. An electronic signature can be used to digitally sign and protect documents and reports.
Evolution	Evolution is an end-to--end business process and workflow management solution designed specifically for the Industry Division supporting the Technical Inspection and Technical Staffing Services operational business process. The system covers the entire delivery process from gaining the contract with the customer to invoicing and payroll.
Global Resource Manager (GRM)	Global Resource Management (GRM) system manages all aspects of the resource management process. The goal of GRM is to support all Business Strategy units to effectively and efficiently utilize resources, including employees, contractors, laboratory facilities and related equipment.

Products / Applications	Details
GoToMeeting Corporate	Enables schedule of meetings in advance or start instant meetings with a single click.
GoToWebinar	Provides everything you need to conduct do-it-yourself webinars, such as full-service registration (including a hosted web page and automatic email communication), polling, Q & A and advanced reporting capabilities.
GoToTraining	Features hosted course catalogs, integrated payment processing via PayPal™, a content library where you can store reusable content and the ability to upload materials and create tests for your attendees to access before, during, and after your sessions.
GSCC	Secure online system for buyers, suppliers, and service providers to build and manage their supply chain. GSCC provides virtually everything a buyer needs to manage their audit program, including: <ul style="list-style-type: none"> • Ability to plan, schedule, and perform audits and inspections • Ability to upload reports and review CAPA • Data integration with their internal systems through use of web-services, EDI and FTP
GSM (Global Supplier Management)	Supply chain management solution designed for our customers. GSM provides the traceability and transparency necessary for informed supplier decisions. It enhances visibility into supplier strengths and weaknesses, allowing our customers to qualify suppliers and manage risk.
iCareers	InfoTIC's enterprise-staffing and recruitment system utilizing the externally-hosted Kenexa™ "talent gateway."
iComply	Simple solution built on sophisticated technology that takes a sequence of product-specific information entered by the importer or manufacturer, produces a production test plan, generates necessary compliance declaration documents and stores all documentation in a complete technical documentation file, all of which is available for easy access 24 hours a day, seven days a week.
iConnect	Customer Relationship Management (CRM) application from Microsoft Dynamics for sales and marketing that provides secure, central repository where Customer information is stored, shared, managed, and reported.
iEnable	Allows auditors and InfoTIC employees to plan and execute audits more efficiently by providing an integrated tracking system and a powerful workflow engine. iEnable automates all steps in the audit lifecycle, including scheduling, preparation, auditing, report approval, report issuance, response, and corrective action (CAPA) tracking.

Products / Applications	Details
InfoTIC Portal (Interlink)	InfoTIC's global portal. Interlink will be the single location for InfoTIC customers, employees, and vendors to go to when accessing InfoTIC systems.
iSwim (InfoTIC System Wide Inspection Management)	Online and offline inspection reporting application, designed to support quantity and quality inspections within Commodities.
Laboratory System Portals (LIMS Portals)	Provide a single point of entry for customers to view consolidated laboratory data regardless of where the tests were performed.
My TestCentral (MTC)	InfoTIC Product Division's secure web portal for our clients providing them 24/7 access to final project deliverables. In addition, our clients can view basic financial information, as well as account and project details.
OneDrive for Business	Cloud-based file storage facility available as part of the Office 365 suite which allows you to store and access and work files from anywhere.
Order and Billing (Phoenix)	Custom application designed to meet InfoTIC's complex job management and invoicing requirements.
Peoplesoft Financials	Suite of services that leverage best practices to achieve world-class finance processes that meet financial and statutory requirements, delivers visibility into business critical information, provides transparency for auditability, and maintains supportable and standardized process to the InfoTIC global user community.
SharePoint	Collaborative web-based platform that enables dynamic collaboration for teams and knowledge communities across InfoTIC.
Silverpop Engage	Robust, externally-hosted email marketing automation platform. While the core of Silverpop Engage is structured around rapid mass emailing, the platform has extended to include automated lead scoring, automated email campaigns, and behavior-centric communications.
SunSystems	Integrated ledger system used to track financial transactions. It provides basic financial management functionality, including: <ul style="list-style-type: none"> • General ledger • Accounts payable • Accounts receivable • Asset management
Tradegood	B2B sourcing community for responsible buyers and trusted suppliers to connect with and get to know their supply chains. We bridge the gap between buyers and suppliers to maximize supply chain visibility and minimize reputational risk. Tradegood creates buyer and supplier confidence through qualification and verification, and helps them to build and maintain deeper, lasting partnerships

Other ways on how technological factors affect the company's business environment are as follows:

1. **Technology transforms business operations**
The technological environment of businesses has changed the way companies like InfoTIC functions. Advancements in information technology have almost taken over every department of the organization. Technology's development has introduced digital marketing strategies enabling the company has to sell their products and services.
2. **Technology creates an open and communicative environment**
By centrally locating the performance appraisal information within a formal and technological framework, the company can easily communicate business strategies and create measurable goals for their employees which will support overall company objectives. It also allows greater visibility, thereby allowing employees to see the bigger picture and understand how individual goals fit into the company's business objectives. In turn, creating energized and engaged employees raises the company's business productivity.
3. **Technology analyzes performance**
Technology provides advanced reporting and business analysis capability to help the company gain a deep understanding of business performance, customer preferences, and market trends. Executives and managers can access performance metrics and analytical reports and use this information to set or redesign a strategy.

SWOT Analysis

Internal Strengths and Weaknesses

InfoTIC's numerous strengths enable it to thrive as one of the leading organizations in the industry. These strengths not only help protect the market share in existing markets but also help penetrate new markets.

Weaknesses are the areas InfoTIC can improve on using SWOT analysis. Identifying these areas will

help InfoTIC build its competitive advantage and strategic positioning.

Strengths

1. ***Strong brand reputation and corporate values***
A strong brand proposition places InfoTIC as the market-leading provider of Quality Assurance services. InfoTIC has always been a pioneer, anticipating the needs of its clients with bold innovations. True to its founders' innovative spirit, InfoTIC is redefining the industry with the company's Total Quality Assurance value proposition – going beyond physical quality control through Testing, Inspection and Certification services to offering Total Peace of Mind which involves additional assurance services to ensure customers' operating procedures and systems are functional.
2. ***Competent auditors, trainers, inspectors, and engineers***
InfoTIC has been steadily growing its assurance capability over the years. It currently consists of some 3,000 highly trained and experienced auditors, trainers, inspectors, and engineers who conduct an annual average of more than 100,000 audits and inspection jobs across America, Asia Pacific, and Europe.
3. ***Clear and effective global policies and procedures***
InfoTIC has robust ethical policies and control procedures to ensure that good business ethics are embedded throughout the organization. Performance and processes are constantly reviewed and aligned with the industry's best practices. The company's compliance initiatives include internal training and communications, independent internal and external auditing of both operating and financial procedures, whistleblowing hotlines, external communication, and collaboration with industry partners and customers.

Weaknesses

1. *Poor cost control*

The company has witnessed many estimators more keen on getting projects to be funded and built instead of forecasting right. In addition, early commitments to design solutions established cost at the initial stage. Locking the cost and the product design reduces the opportunity to decrease the cost during construction. It is also highlighted that making a wrong decision at this stage is extremely costly further down the development process where product/service modifications and process alterations are more expensive.

2. *High attrition rate in workforce*

InfoTIC Group Plc has a higher attrition rate and therefore, has to spend more on employee training and development compared to its competitors.

3. *Communication issues*

- a. *Language barrier*- Communication crucial to InfoTIC since employees talk to people from all over the world every day. Culture and language differences sometimes hinder effective communication in the workplace. Employees find it hard to understand customer inquiries and often commit mistakes when providing information.
- b. *Time zone*- Time is the most precious thing for today's customers. No customer would like to be kept on hold for a long time. InfoTIC usually encounter problems with time zones particularly when the customer has to wait until the person concerned is available to answer their queries.

Opportunities and Threats

Despite the close competition in the market, InfoTIC still innovates ahead of its competitors by considering opportunities and easily identifying risk factors by determining threats.

Opportunities

1. *Increase in government requirements*

Increase in government requirements for testing companies like InfoTIC will keep its consumers and the public safe from a wide range of dangers (e.g.. cyberattacks). Regulations also allow companies to develop credibility by requiring them to be certified.

2. *Rise of globalization*

The rise of globalization is an opportunity for the company to innovate more and have a wider array of products, services, technologies, and knowledge. These developments will have the potential to reach significantly larger customer bases; this means larger volumes of sales and exchange and larger growth rates.

3. *Continuous updates of the ISO standards*

Companies need to stay relevant and competitive in their respective industries to be easily recognized and certified. Continuous updates of ISO standards are an opportunity for InfoTIC to grow customer demand. This will help the company attract more customers and boost its sales by letting clients see the value in the Total Quality Assurance approach and hopefully encourage them to outsource their quality assurance requirements through InfoTIC.

Threats

1. *Increased competition*

An increase in accuracy levels with firm size and reputation will enable multinational certifiers such as InfoTIC to have a competitive advantage in terms of cost. Reputation itself is a function of testing companies' market experience, but tightening competition might reduce the company's accuracy and reliability and number of consumers.

2. *Emergence of certification piracy*

Emergence of companies using pirated

certificates is uncontrollable. Their low-cost products and services deceive consumers. As a result, assurance of quality and reliability is low and prone to lawsuits. Certification piracy is a big hindrance to the credibility of InfoTIC and other legitimate testing and certification companies.

3. *Rise of e-learning*

Rise of e-learning such as Microsoft dynamics and QuickBooks tutorial hinder companies from obtaining licensed software from quality assurance companies like InfoTIC. This is because e-learning offer cheaper products to consumers.

Recommended Technology

Rationale for Choice of Technology Recommended

Integrated HRIS have profound effects on firms that implement them. Most often these firms replace several related systems, such as a personnel database, payroll system, and benefits system with one HRIS that does it all. People tend to focus on the improved reporting and processing realized from the new system; often forgetting that the new HRIS will most likely affect the company deeply and will challenge HR-related departments' operating structure and principles.

An integrated HRIS results in a drastically different environment than a cluster of related but separate systems. The core concept of a centralized data store inherent with an HRIS demands integrated work processes for consistently managing that store. The two attributes – centralized data storage and integrated work processes – will affect the company in ways most managers don't expect.

HRIS is software used to acquire, store, manipulate, analyze, retrieve, and distribute information about employees and should be:

1. Accessible. Shared across the organization and other systems eliminating duplication and ensuring accuracy;
2. Protected. Safeguarding employees' confidentiality and business continuity;

3. Functional. Securely holds current and historical information for analytics, statutory reporting, compliance and payroll net pay calculations.

Group HR encourages and supports sites to:

1. Become more efficient by using technology to reduce administrative tasks
2. Be legally compliant by ensuring good and proper recordkeeping
3. Make better people decisions based on data and analysis
4. Achieve synergies by operating a single system for people data in each country.
5. Where legally and technically feasible, to share HR resources with other neighboring countries through a single shared HRIS.

Alignment with Company's Vision, Mission, Objectives

InfoTIC's objective is to create sustainable growth for all. Our sustainability priorities include:

1. Having positive impact on our people, suppliers, and the communities in which we operate.
2. Supporting our clients with our industry-leading sustainability value proposition.
3. Improving our non-financial disclosures to strengthen our investment proposition.
4. Tracking our progress with the United Nations' Sustainable Development Goals
5. Continuous progress in sustainability through appropriate organizational focus.

Deploying an HRIS in InfoTIC Philippines aligns with its objective to positively impact its people and achieve continuous progress through appropriate organization focus via the following expected benefits:

1. Single record system for all employee data feeding Payroll and other systems reducing effort duplication and increasing accuracy, promoting efficiency across the organization. It helps ensure the organization is compliant by retention of HR related statutory data and production of statutory reports to external authorities

2. Manages all security, access, retention, and disposal controls required to conform to legal, statutory, and company standards on protection of personal data.
3. Prevents irregularities, thus lessening opportunities for non-compliance.
4. Manages the links to official documents related to past and present employees as a backup to paper-based records.
5. Provides a full audit trail of authorization and changes made to HR information.
6. Enables information to be shared between different locations and departments.
7. Facilitates the consolidation of data for key organizational data.
8. Provides more complete data about a person enabling Managers to make better people decisions.
9. Builds data bridges to other systems (including to the intranet directory or finance applications).

Description of Technology Recommended

The following are the prerequisites of the HRIS to be implemented in InfoTIC:

1. All HR activities generate records which need to be captured and managed, regardless of whether the records are in paper or electronic format.
2. Poor recordkeeping standards result in unreliable information about employees which is a major obstacle to effective and accountable management.
3. Good standards and practice lead to:
 - a. employees being managed efficiently and equitably
 - b. informed and consistent decision-making
 - c. transparency and accountability
 - d. consistent monitoring and evaluation of employees

The installation of a HRIS does not automatically lead to enhanced people management. It does give

access to more complete data as the foundation for better decisions.

An effective HRIS cannot be installed over poorly managed or non-functioning paper-based systems, as this leads to incomplete, outdated, inaccurate, and unreliable in the new HRIS.

For the HRIS to be accurate, current and complete supporting processes procedures must be in place to ensure information is routinely captured; otherwise, it ends up with incorrect information, rendering the system's output unreliable and ineffective.

The system should support a set of key fields. The 5 groupings of 50 Foundation Data Fields are presented in Table 2. It should support the HRIS Data Model for better analysis and decisions as shown in Figure 1 and Figure 2.

It should support the key self-service Apps for manager and employee. It is designed to improve productivity by eliminating simple updates and making use of online authorization workflows. It should have the functionality and capacity to store and link large amounts of documents such as contracts and accreditations. It should be able to integrate with the local Payroll (ensuring no dual keying). It should maintain a full audit trail of all changes to a person's records. It should not require any customizations. When buying an off-the-shelf system, don't customize it unless it is critical. These customizations will cause difficulties and on-going extra costs each time the system is upgraded.

All these requirements are met by *Oracle PeopleSoft Enterprise Human Capital Management* (PeopleSoft HCM) which enables employers to architect a global foundation for HR data and delivers a robust HR functionality allowing companies to increase productivity and improve HR business processes.

It has the ability to:

1. capture and manage critical talent information
2. configure workflows and notifications, alerts, and approvals
3. allows online time entry and absence

- management
- 4. generates robust reporting including pivot grids, charts, and queries

Benefits of setting up PeopleSoft HCM include:

1. Enable managers and employees' self-service to reduce administrative costs
2. Automate HR processes
3. Enables better HR decision-making
4. Creates a single system of record with full auditability
5. Supports statutory compliance and internal policies

Cost-Benefit Analysis

Total Cost of Ownership

The Cost-Benefit Analysis is based on the price list of PeopleSoft HCM and has the assumptions shown in Table 3. Costs considered are Software and License, Installation Cost, System Maintenance, and System Upgrades.

Direct and Indirect / Strategic Benefits

A huge benefit of HRIS is that recurring tasks can be expedited with automation. HRIS also improves the ability to reach big candidate pools when it comes to new position openings. This software can apply higher selection standards to applications, speed up the onboarding process with mobile accessibility, and reduces paper often saving costs. HRIS makes distributing up-to-date materials easier. Company policies and procedures, with this ease, are sent to all employees simultaneously and immediately.

There are many more benefits of HRIS like:

1. Improvements to HR productivity figures
2. A per capita time saving thanks to faster self-service HR transactions.
3. More streamlined processes reduce time taken up by HR staff for every transaction—hence, more time saved.
4. Increased employee retention rates.
5. Lower dropout rates for training activities, meaning improved value for money.

6. Lower employee turnover.
7. Better legislative compliance. Have your system's automatic notifications reduced your penalties/ extra work due to late or incorrect filing.

Table 4 covers the estimated monetary savings. The estimated cost of losing an employee can range from 25% to 200% (average of 100%) of that employee's salary. One weakness of the company is its high attrition rate (estimated 20%).

Financial Analysis

All the outflow of Cash and the inflow in terms of savings per year are tabulated and computed for the NPV and IRR. Based on Table 5, the NPV is positive on the 4th year. This signifies a positive sign to invest because it will return the investment and accumulate more savings in the coming years.

This will also be a good sign for the company's future because of the investment in the HR and Finance department. The amount of savings is just the tip of the iceberg; this investment's major benefit will be evident in employee efficiency and people management.

Table 2. Human Resource Information System Foundation and Data Field

Foundation	Data Field
Personnel Administration (InfoTIC Related)	Appraisal Records (doc link or system link) Benefits (or system link) Bonus opportunity & outcome Contract of Employment (doc link) Currency Dates Employed, Rehired, Terminated Discipline and Grievance (doc link) Holiday entitlement Letters of Promotion and Transfer (doc link) Notice Period Retirement plan Details Salary level (Base) Termination of employment details Training Records (or system link) Work related accidents, injuries, diseases and dangerous occurrences (doc link)
Payroll Related	Additional Allowances Bank Accounts National ID Payroll ID
Job Administration	Activity Type (Direct, In-Direct, Share Support, ...) Division / Business line / Support Function Employee Type (Employee, Contractor, ...) Employment Type (Full Time, Part-time, ...) Job Description (doc link) Job Title (English) Job Title (Local Language) Local Grade Manager Place of Employment/Assigned Site Selection Process (doc link) Seniority Level (N-x)
Personal Data (Non-InfoTIC)	Addresses Date of Birth Education Details Emergency Contact Equal Opportunities data (gender, race, age, disabilities, belief, orientation) Names and Title Phone Numbers Prior Work Experience Qualifications, Competences and certifications Work Permit/Visa Proof of Identity (doc link) Security Clearance (doc link)
Attendance Management	Holidays Requested Holidays Taken Individual Hours Worked (re: Working Time Directive)

Figure 1. HRIS Context Diagram

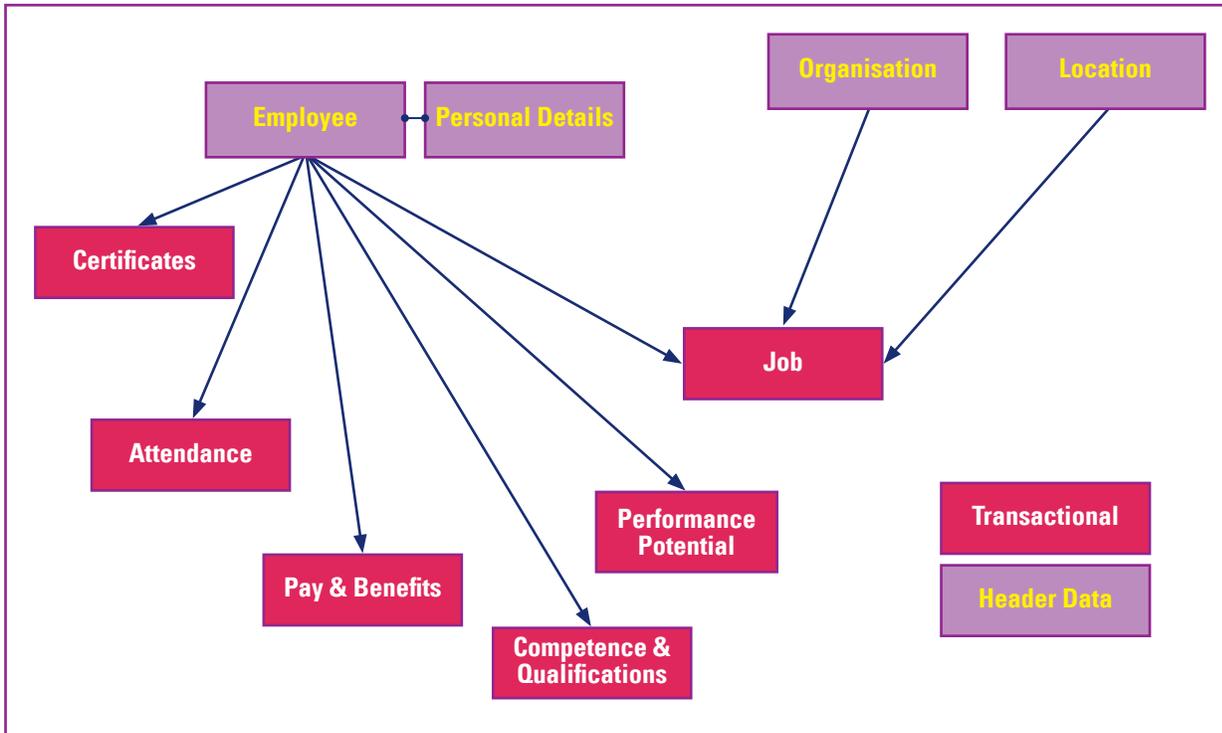


Figure 2. HRIS Workflow

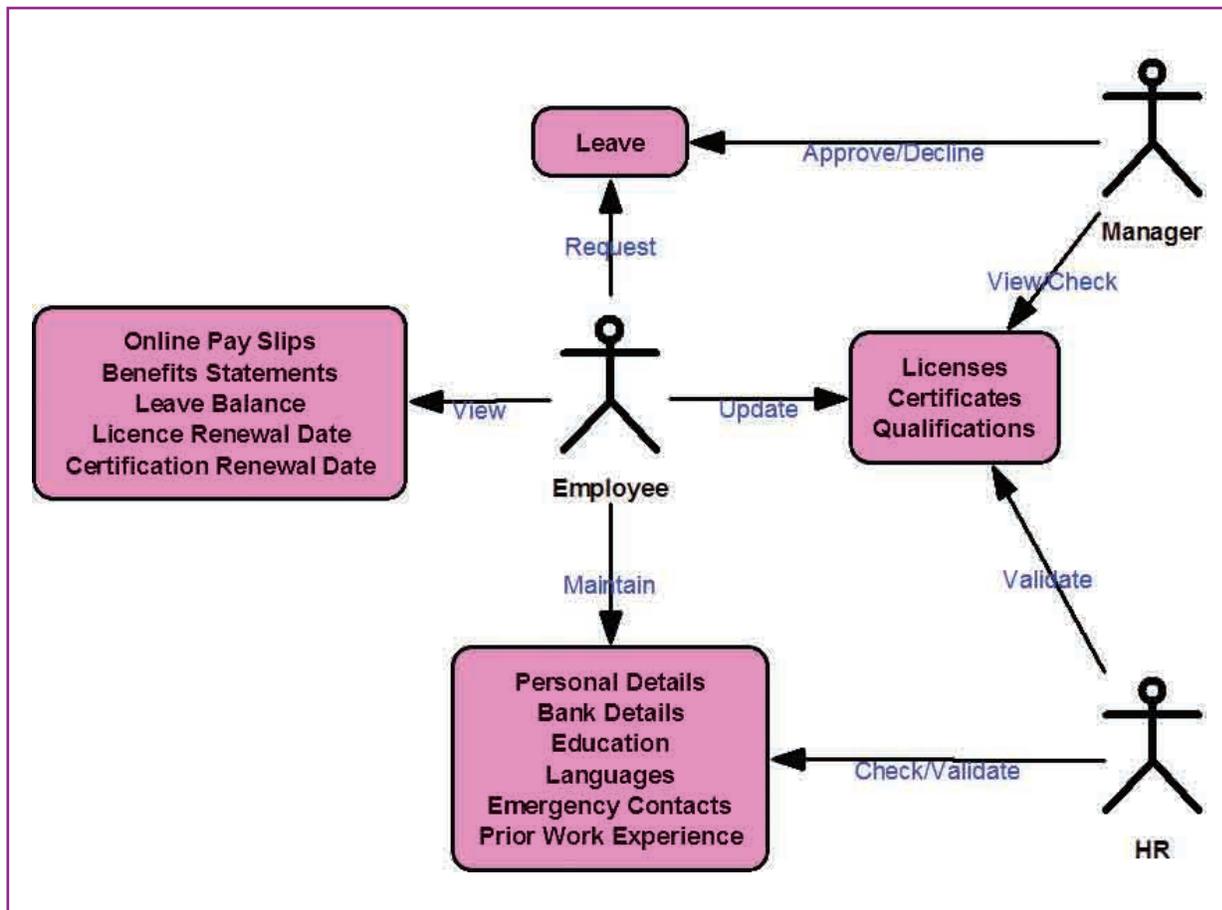


Table 3. Cost of HRIS per Function, in Pesos (assumed 100 employees in the company):

		Component License Price	Software Update License & Support	SUM	Est. No. of Employees	Total Cost
Software	Absence Management	2,704	594.88	3,298.88	100	329,888
	Benefit Administration	4,420	972.4	5,392.40	100	539,240
	e-Compensation	1,820	400.4	2,220.40	100	222,040
	e-Performance	5,460	1,201.20	6,661.20	100	666,120
	Human Resources	9,620	2,116.40	11,736.40	100	1,173,640
	Payroll	11,700	2,574.00	14,274.00	100	1,427,400
	Payroll Interface	3,640	800.8	4,440.80	100	444,080
	Pension Administration	4,420	972.4	5,392.40	100	539,240
	Recruiting Solutions	3,900	858	4,758.00	100	475,800
	Succession Planning	3,640	800.8	4,440.80	100	444,080
	Time and Labor	5,720	1,258.40	6,978.40	100	697,840
				Grand Total Cost		6,959,368

Table 4. Estimated Monetary Savings (in Pesos)

Savings (per 100 employees)	
Turnover of Employee - Process of resignation - Hiring of new employee - Potential increase in salary of new hires - Training and development of new employees	1,400,000 (Avg no. of resigned employees/yr * average salary (100%) - Php 70,000)
HR and Finance Admin Savings (cut down staff to half) - reduce overtime work by employee - much productive / automation of system	1,000,000
TOTAL SAVINGS:	2,400,000

Table 5. NPV Table based on the TCO and Savings, in Pesos

Year	Year 0	Year 1	Year 2	Year 3	Year 4
Initial Investment	(6,959,368)				
Potential Savings		2,400,000	2,400,000	2,400,000	2,400,000
Net Cash Flow	(6,959,368)	2,400,000	2,400,000	2,400,000	2,400,000
NPV	1,527,989				
Discount Rate (based on https://tradingeconomics.com/philippines/interest-rate)	4.75%				
IRR	14%				

Ethical Implications

There are many advantages to adapting an HRIS system as mentioned earlier. However, the application or upgrade to a newer system such as the HRIS would certainly challenge the HR departments' operations and bring forth ethical implications.

Rajini Joseph, in her article Ethics in Human Resource Measurement and Reporting, talks about the collection and conversion of employee data into information for HR metrics. This can then be broken down into four phases, namely: Data Collection, Data Preparation, Data Analysis, and Data Reporting.

To put things into better perspective, we break down the process of system adaptation into the 4 phases of data processing in any organization. This would make it easier to identify the ethical issues, concerns, and corresponding actions as we go through each step.

STEP 1: Ethics in Data Collection

Data Integrity

The first stage of data processing involves collecting data in the system with the goal of capturing specific and quality employee information. Accurate and honest data must be collected to ensure the integrity of the purpose.

Joseph writes that, "Data Integrity is the key concept in ethical data collection." It refers to the validity, accuracy and consistency of data over its entire lifecycle. It aims to prevent mishandling and tampering of information through Human Error, System Transfer and Transmittal Errors, Software Bugs and Viruses, and Hardware Malfunctions.

Thus, HR departments must input data honestly and objectively to keep data collection practices consistent. The company should also implement policies and safeguards as well as proper training in handling sensitive data.

Constant software and hardware system updates should also be monitored to ensure the system is up to date to avoid malfunctions and system bugs.

Data Privacy and Data Protection

Perhaps the main ethical concern arising from the implementation of a new HRIS system is Employee Data Privacy and Data Protection. As discussed previously, for a large international company such as InfoTIC the system not only works within the company, but also communicates with the bigger intra-company system.

The system requires the following sensitive information from each employee in the company:

1. Personnel Administration (Compensation packages and Bonuses)

2. Payroll Related Information (IDs, Bank Accounts, Identification Documents)
3. Job Administration (Work Scope and responsibilities)
4. Personal Data (Individual information that make up an employee's identity: health, sexual orientation, religion, age, etc.)
5. Attendance Management (Leaves, Tardiness, Patterns, etc.)

All these information, if not carefully used and collected, could not only bring internal career problems, but also affect employees' personal lives as well.

The ethical issue of data privacy should always be questioned especially with all the employee information stored in one place. The company should be wary of how it collects and stores employee data as well as the possibility of human error and the temptation to use data for the wrong reasons.

Sensitive information available in the record system could be used to access personal and private accounts outside of the HRIS system leading to detrimental personal identity, financial, and security loss. Hence, the company should implement additional safety measures to shield its employees from hacks and identity theft.

Joseph also states that other than privacy, personal freedom comes into focus when such concerns are brought up, hence, companies should only use such information to the purposes that have been agreed on. Those handling the information should conduct themselves in a responsible manner when collecting, processing, and storing an employee's personal information.

The Data Privacy Act of 2012 (Republic Act 10173) was enforced in the Philippines to ensure compliance with all the requirements enforced to protect personal information in both government and private sector companies (www.safenet.gov.ph).

gemalto.com). It sets a data accountability and compliance framework that covers a wide range of issues such as governance, data security, training, third party affiliations, and breach notification. This requires organizations to prove that they have data encryption and centralized key management in place to keep both employee and customer information from external attacks and internal user abuse.

The act requires organizations to appoint data privacy officers who would monitor on-premises and cloud environment encryption methods to ensure the following are protected:

1. Servers (including file encryption, application encryption, column-level database encryption, and full disk virtual machine encryption)
2. Storage (including network attached storage and storage area network encryption)
3. Media (Disk Encryption)
4. Networks (high-speed network encryption)

The act also requires organizations to prove they implement strong key management to verify the legitimacy of user identities and digital transactions. Hence, demonstrable and auditable security controls must be implemented.

STEP 2: Ethics in Data Preparation

The following are the steps involved in data preparation from an HR perspective:

1. Removing unnecessary and incorrect data.
2. Proper Transcription of data for processing
3. Reviewing for inconsistencies
4. Selection of data analysis strategy based on available data

The implementation of an HRIS system would allow faster and more efficient application of these steps. Data must be collected and prepared

correctly given the massive size of information the system processes. Thus, the people in charge of monitoring the system should be accountable and responsible for properly processing and protecting the data.

STEP 3: Ethics in Data Analysis

The implementation of an HRIS system would provide management access to information they could analyze for decision-making. Joseph, in her article, defines Data Analysis as the systematic application of statistical and logical techniques to illustrate, analyze, and evaluate data.

Evaluators/managers, in this stage of data processing, must use the right statistical tools and analysis techniques to ensure data integrity for accurate and appropriate findings. Improper statistical analyses can distort findings, mislead casual readers (Shepard, 2002), and may influence negative perceptions within the company. This is applicable to analysis of non-statistical data as well.

STEP 4: Ethics in Data Reporting

Adopting an HRIS system makes information accessible to management at a snap of a finger. This is all well and done if the results are favorable. However, the biggest ethical problem that could arise in using such systems is during data reporting - especially if the results are not what management hopes to be. Joseph also mentions in her article that typical misleading data reporting includes the following practices:

1. Neglecting negative results
2. Omitting missing data points
3. Failing to report actual numbers
4. Manipulation of data
5. Use of inappropriate graphs, labels, and terminologies
6. Data Dredging

Organizations are therefore encouraged to practice transparency by showing proof of actual information and reporting their sources. This eliminates guesses, incorrect decision-making, and the possibility of users manipulating the system.

A checks and balances system must be imposed so data collection, processing, and analysis are done by separate entities to lessen the chances of tampering. Data access protocols should also be implemented to adapt a hierarchical system.

Given the different ethical issues discussed in every level of data processing, Joseph writes that it is not the lack of guidelines or principles that prevents ethical HR practices (with or without an HRIS), but a lack of appreciation of ethical conduct, poor understanding of data processing concepts, and proper training of HRIS capabilities. The responsibility lies solely on the user and data owners to understand the system's strengths and weaknesses as well as the threats that come with handling data through whichever system they may be using. . Beyond technical expertise and hardware capabilities, the individual and corporate ethical culture and attitude of an organization is most essential for the success of any technological adaptation. Only then can a system upgrade such as InfoTIC's HRIS implementation become successful.

Apart from the aforementioned functions, the HRIS also helps in other non-personal management activities like organizational restructuring, enhancement of productivity, strategy formulation, and its implementation and enhancement of quality.

Organizational Restructuring

Many companies implement a new HRIS to change or replace different systems including payroll systems, benefits systems, and employee information storage systems. The new HRIS boasts one system that performs all functions. Other companies may implement

HRIS to modernize non-automated systems or update legacy systems. Most organizations fail to realize, however, how deeply the implementation of a new HRIS will impact the organizational structure and processes. These processes include evaluation process impact, process improvement insights, technical aspect of implementation, human aspect implementation, and turnover after HRIS implementation.

To successfully set up the new HRIS, people who have acquired a thorough understanding of both the business and the HRIS will need to configure the system to meet the organization's needs. Many aspects of the organizational structure and processes are bound to be different once new HRIS is successfully implemented. Ideally, these changes should be viewed positively, but it is not realistic for all employees to happily adapt to the changes in daily tasks and overall job description created by the HRIS. Companies must prepare themselves for turnovers as employees come to terms with these changes.

Enhancement of Productivity

Three main factors were identified regarding HRIS' contribution to effective succession planning. These include identifying specific key positions and targeting specific employees as potential successors, making better and faster decisions about talent pipeline and successor ranking, and identifying and tracking high potential employees and implementing development plans.

These findings affirm Dessler, Shiri, and Shibly's argument on how HRIS makes HR planning easier on different aspects. The system simplifies workforce gaps and supports long range planning with information for labor force planning and supply and demand forecast. It also simplifies staffing with

information on equal employment, separations and applicant qualifications; and development with information on training programs, salary forecasts, pay budgets and labor/employee relations with information on contract negotiations and employee assistance needs through HR knowledge systems.

Strategy Formulation and Its Implementation

Modern human resource information systems are comprehensive, accurate, and accessible systems for recording employee and work data relevant to organizational planning. The system is used to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information regarding an organization's human resources. Its purpose is to facilitate or support straight, tactical, and operational decision-making, avoid litigation, and evaluate programs, policies, and daily operations.

Specific benefits of such systems include:

1. Improved planning and program development using decision support software. The software enables faster information processing and improves response times
2. Decreased administrative and HR costs
3. Accuracy of information
4. Enhanced communication at all levels

Enhancement of Quality

There are a lot of advantages to using an HRIS in managing a company's human resource function. These advantages are as follows:

Access to Updated Data- One of the major benefits of using HR information systems is that all your updated HR information is stored in one platform, which allows for a streamlined HR process. Any changes in employee information only need to be

entered once to override the outdated information. HR employees currently using spreadsheets need to enter the same piece of information in several different sheets to update employee files. When information needs to be entered in multiple places, there lies a risk of missing sheets. This means some of your HR spreadsheets could be storing outdated employee data causing problems for many aspects of HR.

Increased Productivity- As companies grow, manual processes like spreadsheets become very inefficient. Your HR employees may be spending a lot of time performing data entry or searching for information. Tasks like employee onboarding leave management and benefits administration can be completed more quickly. This boosts HR employees' productivity.

Reduced Costs- Increasing productivity will also save your company money. Inefficient departments need more employees to complete their tasks whereas efficient teams can get more work done with fewer staff members. This will pay off as your company grows. Using a human resource information system enables the same number of HR employees to handle the demands of a growing workforce.

Improved Compliance- There are regulations for recruiting, selecting, and hiring employees. There are also regulations for wages, vacation time, statutory holidays, overtime, and hours of work. If keeping track of all that wasn't hard enough, companies also need to follow regulations about terminations, layoffs, and dismissals, benefits and pensions, leaves, and more. HR employees will experience difficulty in keeping track of all compliance issues as the company grows.

They need to ensure every single employee follows these rules. Using an HRIS will make it easier to monitor compliance. HR employees simply need to enter the applicable regulations, and the platform takes care of the monitoring.

Lower Potential Liability- Your business could face serious consequences if it isn't compliant with labor laws. Small compliance violations, even if they weren't done maliciously, have big consequences for businesses. Your company could get fined or even sued for violation. Using an HRIS will lessen the company's chances of getting into these types of situations. Liability could also occur if you offer coverage, such as life insurance, based on employee salaries. For example, if an employee gets a raise, but the insurance carrier isn't informed, the employee won't receive the proper coverage he is due. If the employee dies before his salary gets updated, his family could sue the company. Choosing an HRIS with connectivity automatically updates the the insurance carrier about these types of changes.

Any company that chooses to utilize a human resource information system should speed up information sharing and decision-making it through other organizational systems. HRIS also provides insights to the company training needs, selects the right persons to be trained, and evaluates the effectiveness of training programs while forecasting demand and supply of labor, access to information, cost of recruitment, and workforce shortage.

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Legacy Towards Greatness



OLPMC Enrollment Attrition

John Estano • Orange Garcia • Jeffrey Pundanera • Cristina Turla
Valerie Valdellon-Ong • Rj Zabala

Our Lady of Pilar Montessori Center, OLPMC to families and friends, has been part of its community since 1979 when it opened its first classroom. It started out as an adjacent structure to its founder's home inside the village, housing around 40 students during its first year. Just like any dedicated entrepreneur, Claire V.

OLPMC
Purpose Statement:

“We are a community of well-rounded leaders in pursuit of excellence.”

Garcia, the OLPMC's Founder and Chairman was its first Teacher, Principal, Cashier, Accountant, Security Guard, and School Bus Driver. Just 15

years later, through sheer courage and tenacity, she was able to grow her obscure classroom into a full-fledged educational facility occupying a 5,000 square meter property and housing more than 600 students.

Staying true to the teachings of Dr. Maria Montessori emphasizing every child's individuality, OLPMC sees itself as a real-life community, instead of a mere educational institution, where the child is the very center of its mission. It seeks out to bring the potential of each child to lead and learn, ready to face the future.

As OLPMC was entering the new millennium, trying to survive the Asian Financial Crisis and

the increasing number of competition within its catchment area, its enrollment drastically spiraled down to 200 and stayed that way for almost a decade. By 2009, OLPMC was able to turn itself around and build momentum. Enrollment steadily increased year in and year out. By school year 2013-2014, OLPMC broke the 700-enrollment mark as shown in Figure 1.

If the only KPI (key performance indicator) to consider is enrollment, then OLPMC is performing well on paper. But when our team further analyzed the data, we discovered that while total enrollment was indeed increasing, net growth performance (difference between the enrollment rate of new students and transferees and the re-enrollment rate of current students) was steadily decreasing. See Figure 2.

OLPMC's growth, based on school data, is artificial in nature since low re-enrollment rate is negating new students' enrollment rate. This means even if OLPMC's enrollment is steadily increasing, there seems to be so much attrition: families leaving OLPMC. As a result of the attrition, OLPMC's total enrollment has stagnated in recent years, hovering just around the 700-enrollee mark. The school's business model is quite simple. The longer a student stays in OLPMC, the better income it brings in (and the better the profit margin). If we were to compute the 'Opportunity Cost' of the Students who left OLPMC before graduating Grade 10, it can be summed up to almost One Hundred Sixty-Eight Million Pesos (PhP168M), even if OLPMC does not increase its tuition fee rates. OLPMC's increase in total enrollment mirrors the market where it is operating. The national and local economies in recent years have not shown signs of slowing down. With the increasing growth in both population and the market's spending capacity, it is good to note that education is still one of the priority expenditures of the Filipino household.

The educational landscape is also evolving. Although OLPMC's product is information and its

supply is virtually free, it is still highly regulated and controlled by the Department of Education. The national government, in the past five years, passed two laws that directly affected the educational market. In 2012, RA 10157 (Kindergarten Education Act) institutionalized the kindergarten education into the basic education system. In 2013, RA 10533 (Enhanced Basic Education Act of 2013) implemented the K to 12 Program, adding Grades 11 and 12 (Senior High School), for students to master concepts and skills, and prepare them for tertiary education, middle-level skills development, employment, and entrepreneurship.

The change in the national curriculum as it migrated to the K-12 global format is not the only shift the educational industry is experiencing. There is also the challenge of the new generation, Gen Z. The present generation's intimacy with technology is pushing educators to be more creative and collaborative on how knowledge should be shared and absorbed.

With the population continuously supplying new students, it is essential for OLPMC to address its internal weaknesses to make itself highly relevant and competitive in this fast-paced environment.

OLPMC as a Business Entity

As a social enterprise, the purpose of the business must come first. Using the Triple Bottom Line Framework as reference, Social Responsibility carries the most weight as shown in Figure 3. Economic Gains, although considered essential, is treated as a measurement of the success of serving the mission and as a resource to sustain the mission. Environmental Stewardship, the third element of the Triple Bottom Line, is seen as OLPMC's contribution to the greater community it serves.

But we believe that OLPMC must start and end with its purpose, as illustrated in Figure 4. This serves as the ultimate success measure. Everything

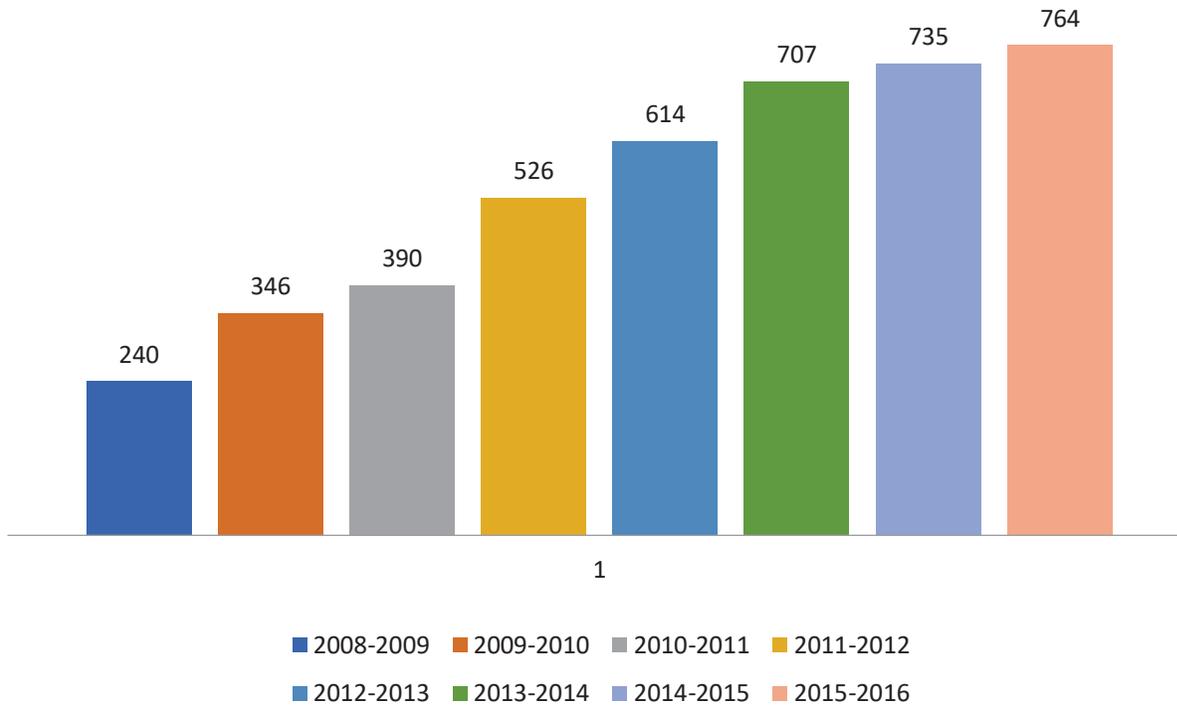


Figure 1. OLPAC Enrollment Profile from School Years 2008 to 2016

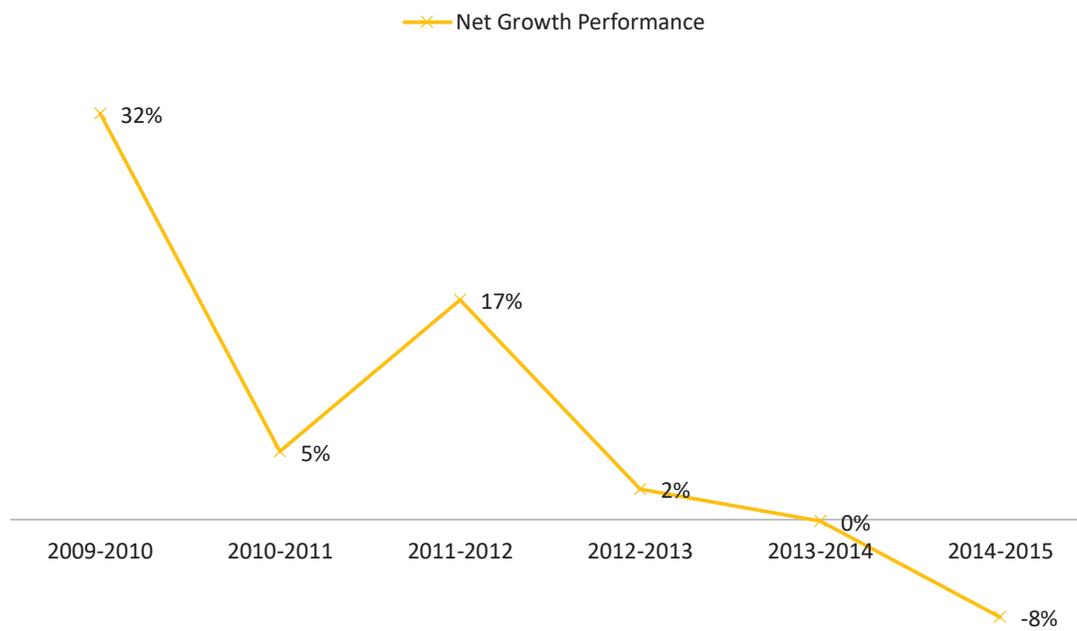


Figure 2. Net Growth Performance

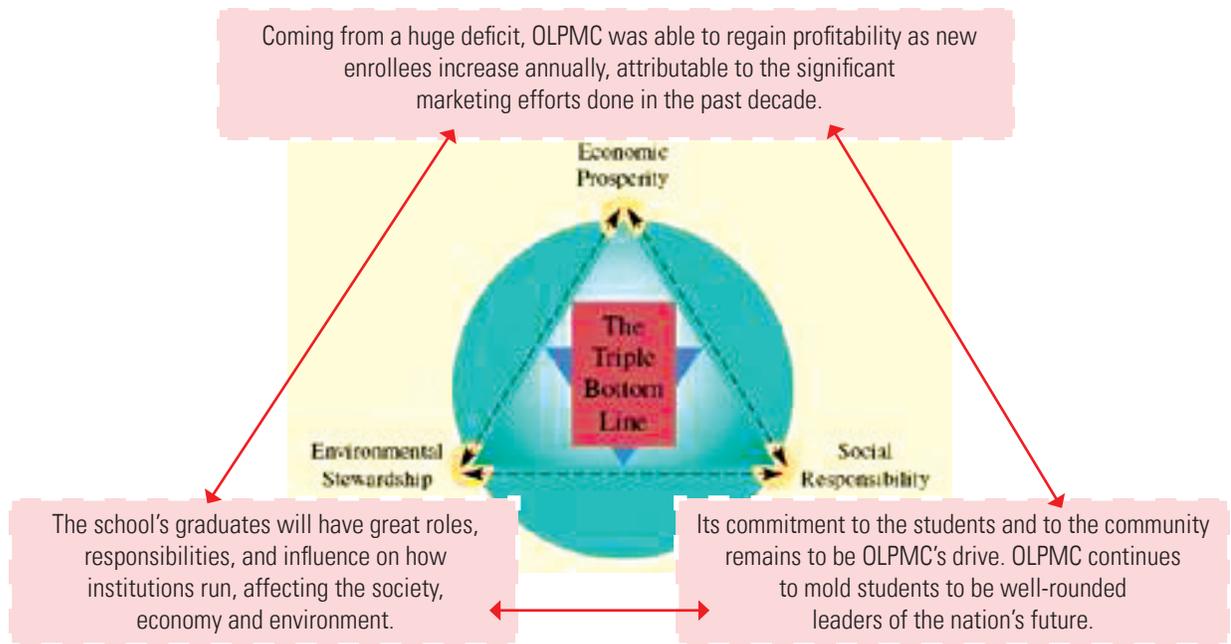


Figure 3. Triple Bottom Line Framework

that OLPMC does and invests its resources in must be fully aligned with its purpose. Thus, we identified three critical success areas OLPMC must pay close attention to.

People. OLPMC must transform itself into a real-live learning community. From its Servant Leaders (employees) and Parent-Partners to its Student Leaders—the very people it seeks to serve, OLPMC must develop a culture of community where communication, connection, and collaboration thrive. Its main responsibility as a social enterprise is to the people within and around its community.

Program. OLPMC must embody quality education to stand out from other schools in the neighborhood. It must be a source of leadership where each person fulfills his/her potential through creative (learning) content that encourages critical thinking skills. Market recognition naturally follows and guarantees economic prosperity once a quality program is

implemented.

Place. OLPMC must transform its facilities into a world-class community center, a representation of operational excellence. OLPMC must adhere to the pursuit of excellence from the moment a potential client (student) steps into the facility until he/she graduates. The school must constantly grow. There must never be room for mediocrity and complacency.

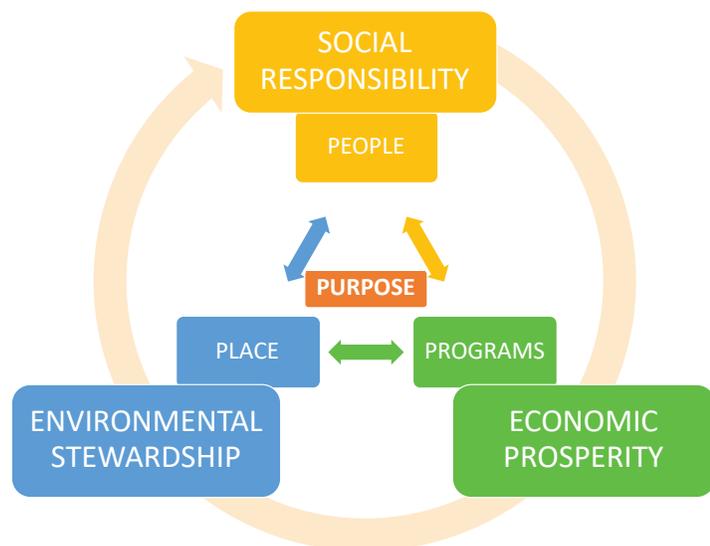


Figure 4. OLPMC Success Measure.

OLPMC is a community of well-rounded leaders in the pursuit of excellence

Why Is OLPMC Falling Short Of Its Purpose?

The current enrollment attrition is the most evident symptom of OLPMC's shortcomings. OLPMC still faces re-enrollment problems despite the surge of new enrollments.

The Fishbone Diagram in Figure 5 shows the possible causes affecting attrition in the OLPMC enrollment. Our team conducted surveys to obtain feedback from OLPMC's clients. Survey results were analyzed using Service gap analysis, Pareto Diagram and House of Quality to dig further into the root causes.

Service Gap Analysis

Service Gap 1: Not Knowing What Customers Expect. Past performances of OLPMC's programs show the school's failure to read customer expectations. The school successfully captured the excitement of the OLPMC Community upon first announcing its plan to venture into e-learning back in 2012.

Unfortunately, OLPMC failed to implement

the program effectively since it did not consult its students and their parents prior to implementing the system. It turns out, the students and parents were more interested in raising the quality of instruction instead of introducing technology into the teaching method. The faculty was also not consulted and was not ready to align the current school curriculum to the e-learning method. The situation was aggravated by the area's slow internet service speed at that time. In addition, IT suppliers lacked the manpower and capability to fully install a new system.

Service Gap 2: The Wrong Service Quality Standards. OLPMC's operations are still deemed as very reactive and not proactive. When asked how it feels to work in OLPMC, employees often compare it to "putting out fires on a daily basis". OLPMC grew from a one-classroom operation serving 30 students to a full-fledged educational institution operating 20 classrooms by the mid-1990s serving more than 600 students. Its growth is credited to the persistence and courage of its founder and matriarch and the efforts of the second-

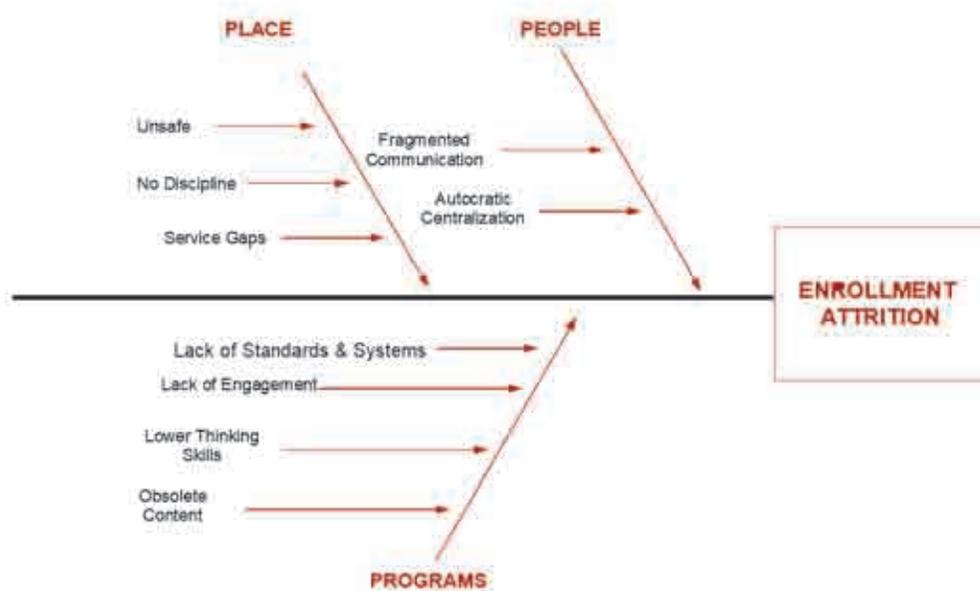


Figure 5. Fishbone Diagram

generation leadership. The community's demands seem to outweigh the competence of its leaders now that it's experiencing fast growth in enrollment. The problem with having all of its successes (and failures) too centralized on a single leadership personality is its lack of a culture of developing solutions to its own problems. Its people are more reactive than proactive. They tend to wait for problems to escalate or for the central leader to issue a directive, whichever comes first, before they respond and act responsibly.

Service Gap 3: The Service Performance Gap.

Reorganization is one of the most drastic changes OLPMC underwent recently. Its original set-up was mostly composed of academic functions. Now it is split into two sub-organizations: Academics and Administration. One of the setbacks it is currently experiencing is its transition stage of managing and leading change. OLPMC's re-organization can be seen as rebuilding its school operations from the ground up despite operating for almost four decades now. The community is going through significant adjustments as its founder and matriarch has stepped aside to give way for the second generation to lead OLPMC to a new direction. Old roles have been abolished while new roles are continuously introduced. Responsibilities are being reformatted and reformed as well. Such changes also have a directly impact its service performance (or lack thereof).

Service Gap 4: When Promises Do Not Match Delivery.

OLPMC, coming from the brink of bankruptcy, has fought its way back to profitability by focusing on marketing. But as mentioned in Gap 1, The biggest challenge of OLPMC now is keeping up re-enrollment as mentioned in Gap 1. OLPMC, in its efforts to keep up, OLPMC tends to overpromise, but end up under-delivering. A recent example

is the school's promise to the OLPMC Community to upgrade all air-conditioning units. Unfortunately, OLPMC failed to plan and coordinate properly despite successfully setting aside the budget to procure new units. Once OLPMC started to install the new air-conditioning units, it soon discovered that its electrical system and load could not support the upgrades and would cost time and money. Although OLPMC is currently solving the issue, complaints arose from the community for its failure to deliver on time.

Service Gap 5: Expected Service – Perceived Service Gap.

OLPMC may be enjoying growth in its new enrollments yet it is performing poorly in retention efforts. Decrease and eventual stagnation is seen when total enrollment is measured against its enrollment targets. Out of seven years, OLPMC only surpassed its target in two years. Unfortunately, it failed to meet its enrollment target in the other five years.

Pareto Diagram

OLPMC believes their students are clients, the people they try to serve. OLPMC fulfills their purpose through them. The team opted to analyze the Top 10 NO answers the students indicated in the Student Survey using the Pareto diagram to determine OLPMC's weakest areas.

As shown in the Pareto diagrams (Figures 6 and Figure 7), OLPMC can invest in two areas; namely, teacher training and development and increasing teacher-student engagements—a combination of People and Program success factors.

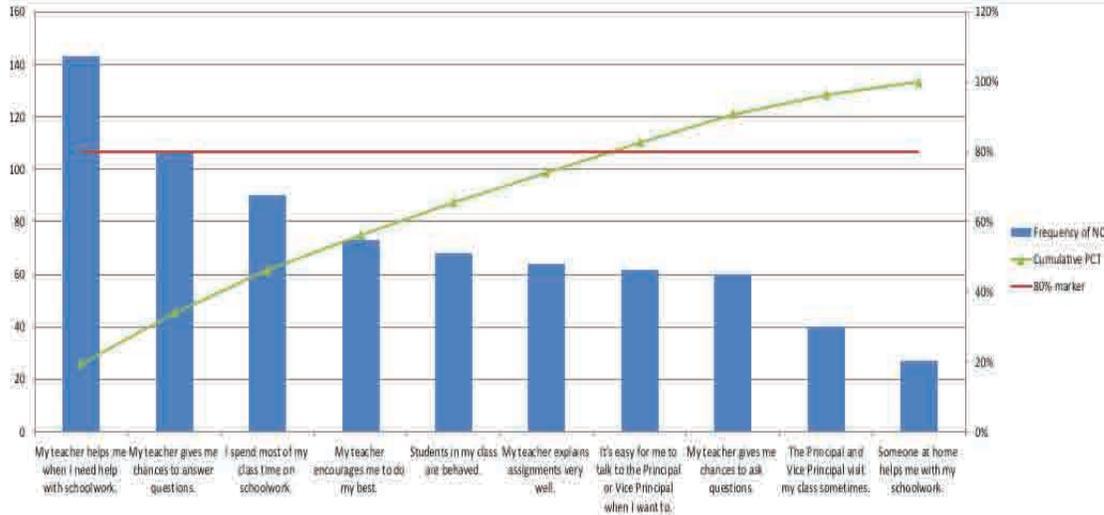


Figure 6. Pareto Diagram for OLPMC Intermediate Level (Grades 4 to 6) Survey

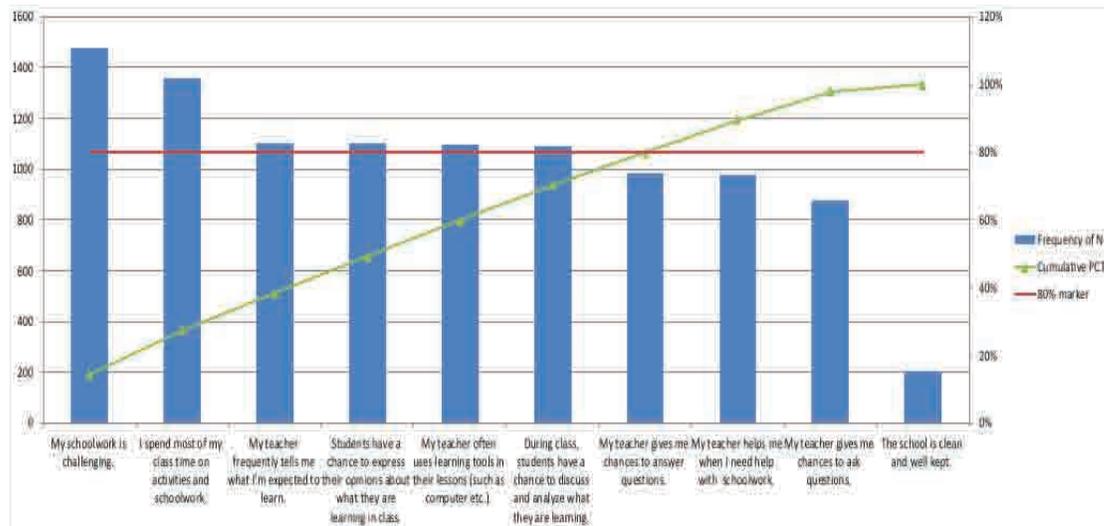


Figure 7. Pareto Diagram for OLPMC Junior High School Level (Grades 7 to 10)



House of Quality

Although OLPMC believes the students are their customers, the team also evaluated parents' requirements since they are the decision-makers when it comes pre-school and grade school enrollment.

The team also decided to separate the framework for pre-School and grade school since parents have different priorities based on their children's ages. See Figure 8 and Figure 9.

Parents of pre-school students are discovered to prioritize safety and security, the development

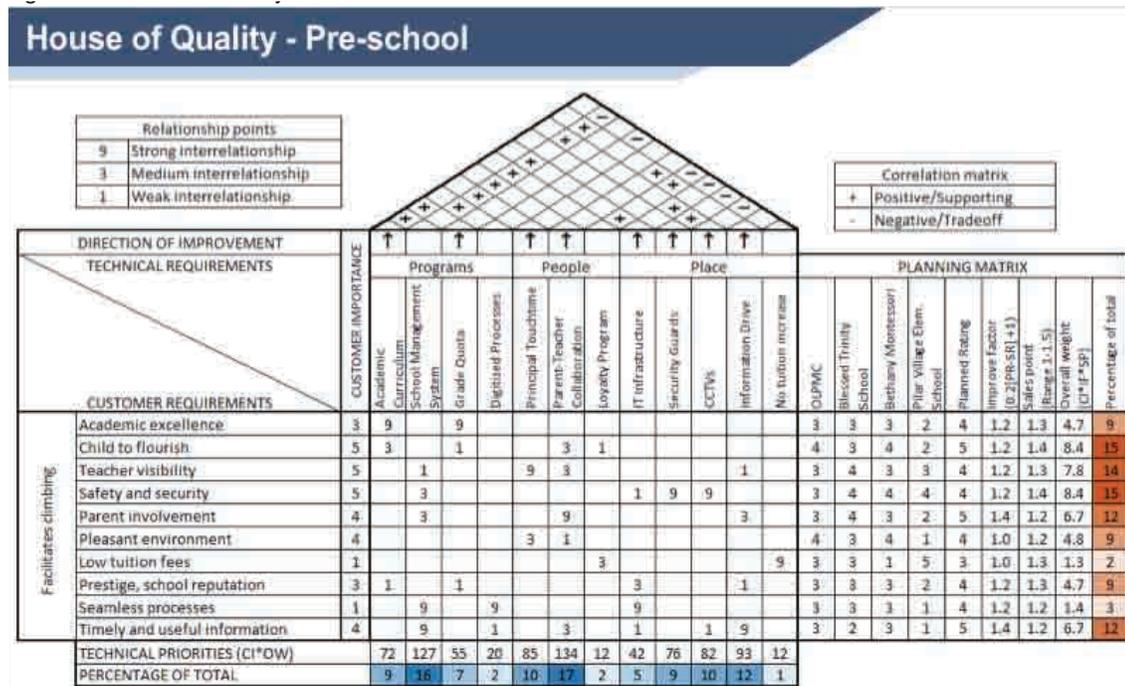


Figure 8. House of Quality for OLPMC Pre School

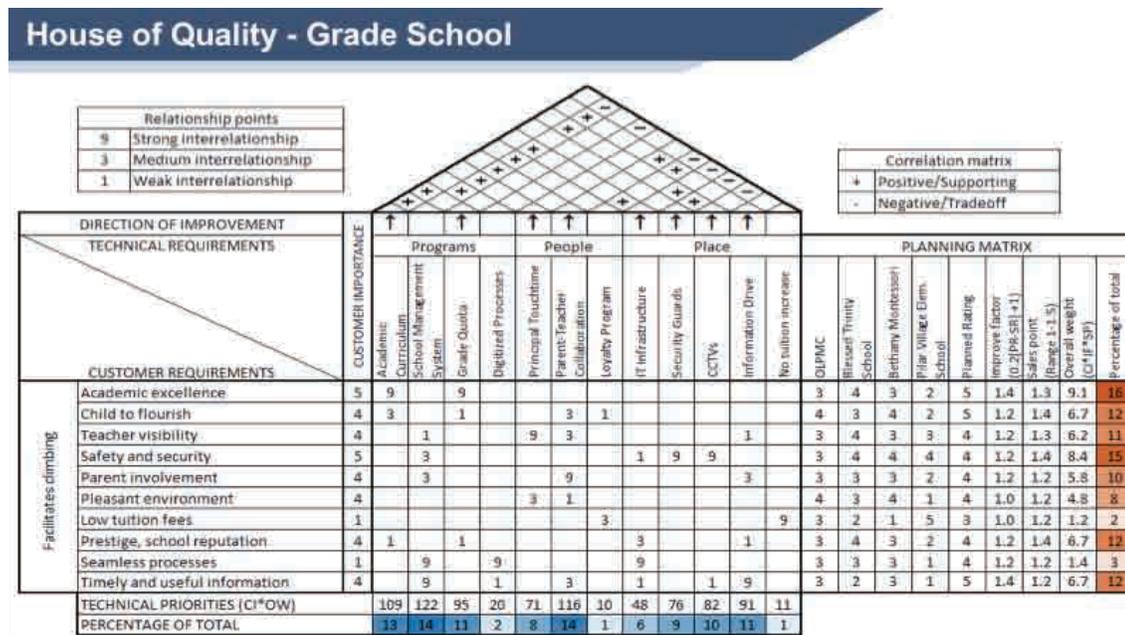


Figure 9. House of Quality for OLPMC Grade School

of the child, and visibility of teachers. Note that parent involvement plays a key requirement in choosing a school.

We also looked at the impact of technical requirements. We noted that these are in the areas of Parent-Teacher Collaboration and Information Communications and Technology.

Based on the House of Quality framework for the OLPMC Grade School, both customer and technical requirements were almost the same except for one item. Grade school parents apparently give value Academic Excellence more. Thus, OLPMC should invest in the academic curriculum to meet this customer requirement.

We discovered, at the end of this research, no real singular cause affecting attrition. It is a combination of various causes (big and small) building up from other. Since most are not addressed properly, They build up over time (since most are not addressed properly) and greatly impact the school's performance.

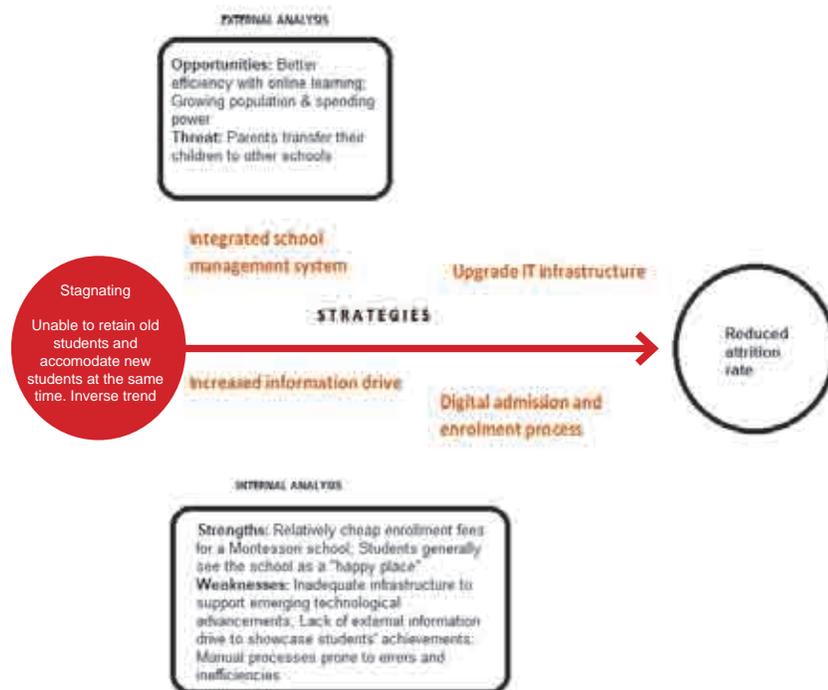
We discovered that OLPMC is experiencing a huge gap from who they are now to who they want to be (People: A Community); from what they do to what they want to achieve (Programs: Well Rounded Leadership); from how they currently do things to how they are supposed to operate (Place: In Pursuit of Excellence). Unclear standards combined with an absence of systems result to unmet client expectations.

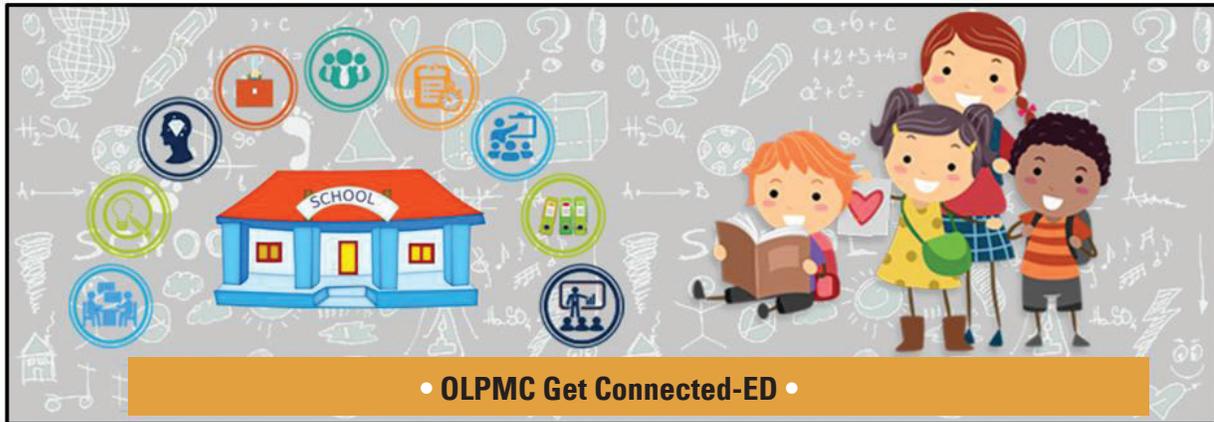
The team recommends a redesign of OLPMC's business processes to strategically support its Critical Success Areas

(People, Programs, and Place). The solution will be named "Get Connect-ED."

Get Connect-ED is essentially integration and not simply automation. OLPMC must revisit and re-engineer its service processes, return to basic planning and seize the opportunity to redraw and redesign its blue print to run this system successfully. A holistic and integrative approach to problem-solving is essential to OLPMC where everything is interconnected and everyone affects each other. Get Connect-ED may not solve all of its problems, but it will definitely allow OLPMC to cover the community's basic needs. This way, it can tackle bigger challenges that bring better opportunities.

Our team recommends OLPMC to invest towards an Integrated School Management System. This system will address other vital customer requirements such as enhancing collaboration between parents and teachers and hosting information exchanges and drives. The name 'Get Connect-ED' is inspired by the idea of using technology as a resource for competitive advantage.





The vision of OLPMC Get Connect-ED is to serve as a platform that connects all of the members of the OLPMC Community --- Educators, Students, and Parents. The system will be covering and offering the following features:

FOR ADMISSION AND ATTENDANCE

- Scheduling
- Room Assignment
- Attendance Monitoring

FOR ENROLLMENT AND FEES

- Online Enrollment and Payments
- Scholarships

FOR ACADEMIC

PROGRAM

- Student Progress
- Homework
- Reviewers
- Tutoring
- Recognition

The teacher is no longer the source nor authority of information. The greatest challenge now is to find more creative ways for students to learn.

With the Academic Module, OLPMC Teachers can use technology to deliver the minimum requirement of education ---- transferring knowledge.

With Get Connect-ED, OLPMC Teachers can now explore more interactive content and concentrate on developing skills that encourage higher thinking skills

FOR SECURITY & SAFETY

PLACE

- Incident Reporting
- School Grounds Monitoring
- CCTV Access
- School Bus

By upgrading its Information Communication Technology, OLPMC can now improve the community's safety and security features.

FOR COMMUNICATION

PEOPLE

- Newsletter
- Announcements
- Parent-Teacher Collaboration
- Principal's Chatroom

With streamlined and seamless communication systems, OLPMC can now connect and collaborate better with its Parent Partners.

Combining this feature with the Academic Module, OLPMC can now deliver its Student Leaders' progress reports in real time.

FOR ADMINISTRATION

- Enrollment Analytics
- Performance Appraisals
- Accounting and Budgeting
- Payroll and Personnel Management
- Records Management

Conclusion: OLPMC Getting Connect-ED

OLPMC began its community improvement in 2009 with a basic market research on their catchment area to determine consumer behavior. Surprisingly, quality of education was only ranked third most important factor in choosing schools for their children. "Safety and Distance," directly defined by the distance between their home and the school's location, was first on their list. "Affordability," directly determined by pricing, came in second. With quality down the list, most households seem to be made up of overprotective and budget-driven parents.

OLPMC was the only school in the village when it started its operations. More schools opened as time went on due to the the Department of Education's failure to follow its own regulation of limiting the number of schools (public and private) servicing a catchment area. At the time of writing, there are two-medium sized schools (500 to 1000 students) one of which is OLPMC, six small-sized schools (50 to 500) in the same K-10 category, and one big school (1000 and over) which is CEU offering K-Graduate Studies. All of these schools operate within a single village, equivalent to one barangay. Combine the number of schools operating within the catchment area with price-sensitive consumers and you have frequent school switching.

There are many factors to consider for the negative net growth performance. But if we simplify the proposed strategy for OLPMC, it all boils down to the following:

HIGH LEARNING STANDARDS + HIGH QUALITY OF RELATIONSHIPS = HIGH NET ENROLLMENT

High Learning Standards. There has been a huge shift in the discipline of learning. Traditional education model used to dictate that the school through the teacher is the sole

and foremost authority when it comes to information. Now, students can simply use Google to find answers. The school, specifically the Faculty, must now function not only as Teacher, but also as Coach, Mentor, and Model to students. They must continuously inspire students to use higher thinking skills (Trends in Education: UBD, Spiral Curriculum, Reverse Classrooms, Virtual and Experiential). The delivery of learning can now be part of the system through Get Connect-ED. Teachers can now focus on developing creative content while engaging students in a more critical manner.

High Quality of Relationships. The saying, 'It takes a village to raise a child,' is now more apparent than ever. Challenges in our parenting culture (at least in OLPMC's market segment) have shifted from one-parenting unit to absentee parenting (from OFWs to single parents working two or more jobs). The school has now turned into the primary home and care giver. Thus when a child misbehaves, it means the school is failing the families who entrusted their kids to them (and not the other way around). So, the old belief that 'It takes a village to raise a child' is now apparent more than ever. With Get Connect-ED, the delivery of communication is now be part of the system. OLPMC's members can focus more on increasing collaboration to build a real sense of community.

OLPMC must TRANSFORM into a living community of learners, engaging every member of its community from parents to students and even employees. This transformation will only be possible if OLPMC focuses on its daily activity. The school must practice accuracy, efficiency, and consistency in all its operations to slowly but surely progress towards excellence.

All AGSB Students and Alumni are welcome!

4-4-2019 6 PM - 9 PM

ADD TO CART CHECK OUT
THE NEW TRENDS IN E-COMM

SPEAKER
Professor Xiaoyun (Jack) Xu
Research Professor of Department of Operations and Information Technology, AGSB

A former professor at Peking University under the Department of Industrial Engineering and Management. As a consultant, he advised some of the biggest E-Commerce companies in the world, such as Alibaba Group, JD.com, Dangdang.com and many others.



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THE NEW TRENDS IN E-COMMERCE

SCAN ME!

SPEAKER
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A former professor at Peking University under the Department of Industrial Engineering and Management. As a consultant, he advised some of the biggest E-Commerce companies in the world, such as Alibaba Group, JD.com, Dangdang.com and many others.

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Jenica Velilla
Senior Marketing, Partnerships

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DOIT Forum: The New Trends in e-Commerce

April 4, 2019 6–9 pm at the APS Auditorium

Professor Xiaoyun Xu, Research Professor of the Department of Operations and Information Technology at AGSB, was the speaker at the student forum held at the APS Auditorium last April 4, 2019. His talk focused on trends shaping the future of e-Commerce in China.



SPEAKER
Professor Xiaoyun (Jack) Xu
Research Professor of Department of Operations and Information Technology, AGSB

A former professor at Peking University under the Department of Industrial Engineering and Management. As a consultant, he advised some of the biggest E-Commerce companies in the world, such as Alibaba Group, JD.com, Dangdang.com and many others.

The invited reactors were Nicolo Hallare, President of AdCentre, Inc. and Jenica Velilla, Senior Marketing of Partnerships at Shopee Philippines.



China, a single nation of more than 1 billion people, accounts for 40% of global e-commerce trade. That's equivalent to having the combined e-commerce trade of the US, Great Britain and Japan. Some 15% of China's total retail trade is accomplished through e-commerce. Almost half of a consumer's renminbi expenditure is realized through e-commerce service. E-commerce employs 25 million individuals of which a third are in the 25-34 age groups. The e-commerce in China's rural area alone covers US\$100 billion. Xu concludes that China has become the number one test field and playground for e-commerce business.

The new trends in e-commerce cover areas such as social e-commerce, information flow, short video clips, knowledge economy, and the Online-to-Offline (O2O) market.

In social e-commerce, it is observed that the strong connection between people is the ultimate force behind purchasing. Leading the way are Wechat with 20 million small business owners selling their products on Wechat and PinDuoDuo which at USD1 billion in sales has become the third largest player in China's e-commerce market behind Alibaba and JD.

On the other hand, Information flow "guesses" what people like and presents this information (news, video clips, product, etc.) to them. It also gathers feedbacks (clicks, time, etc.) automatically in real time to improve the accuracy of its guesses.

cellphone has made people less patient than they were ten years ago. Shooting and editing videos using smartphones are a lot easier to do now. Internet is also much faster now – very fast in China with free 2-4GB monthly data for almost everyone. People's attention is the Holy Grail for almost all e-commerce businesses. Once target market's attention is gained, the rest follows.

In knowledge economy, learning is a life-long practice and people are willing to pay for knowledge. But not everyone has time or money to attend school which led to the development of products offering classes (business, investment, parenting, etc.), audio books (kids and adults), talks and commentaries (history, current events, etc.), news and many others. Xu is also a practitioner in this field. In 2019, two talk shows developed by Xu have aired 250 episodes and played 10 million times, attracting more than 100,000 registered users.

Online-to-Offline (O2O) models recognize that online markets are now saturated and acquiring new users have become increasingly expensive. Thus, there is a need to develop business models that will perform customer behavior analysis and adjust product families to acquire offline customers and bring them over to the online world.

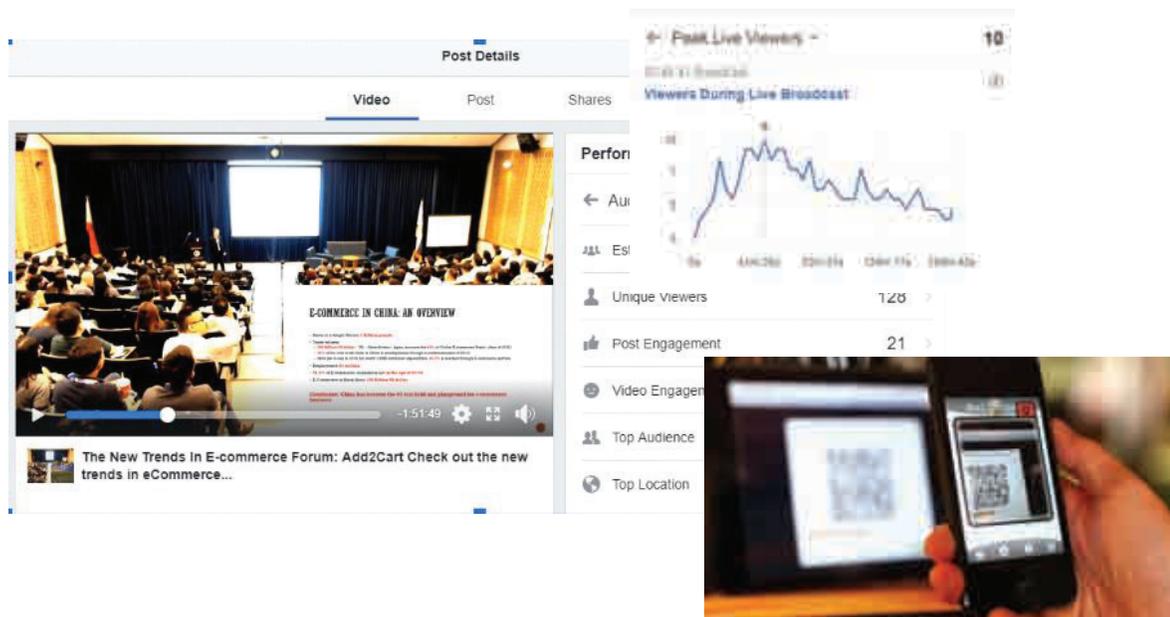
China is proving that e-commerce is a more advanced way of improving quality, efficiency, and cost of business. E-commerce brings profound change to the business world such that

it dramatically broadens the business outreach, largely increases the customer base, helps businesses understand their customer better and strongly stimulates the evolution of the business. There are tons of exciting things going on in China's e-commerce market, many of which are not yet found anywhere else in the world. Unfortunately, very few of these developments have found their way into Western textbooks.

The forum was organized by the Middle Management Program students led by Joseph Carreon as Project Lead. It was attended by 221 participants, largely coming from the AGSB student population. A favorable 73% of attendees provided

a better than expected response to the event. The team organized a Facebook live for all who wanted to watch the event. The team leveraged on Viber and Google drive for group collaboration, capitalized on social media and the school IT infrastructure as well as instant messaging to promote the event, and achieved smooth registration flow through the Eventbrite app.

The Forum Project team was composed of 8 facilitators with 5 volunteers from the Middle Managers Program. The team was divided into functions- Finance, Marketing, Sponsorships, Program/Registration and Logistics, with a Project Lead.



DOIT Faculty Development Tour in Taiwan

Eighteen members of the DOIT had a faculty development tour in Taiwan last June 9-12, 2018.

Panasonic

First stop was a plant visit to Panasonic Taiwan Co. Ltd. factory where Panasonic refrigerators and car audio products are manufactured. Company President Lin Yuanchuan and Company Director Shingo Obata warmly welcomed the DOIT professors. A business discussion with Panasonic Taiwan management was conducted after the plant tour.

Panasonic holds the no. 1 market share in Taiwan with 38.3 % in refrigerator sales. Their basic strategy in competing with Chinese and Korean brands involves developing new products and services designed for the local market.

Current activities implemented to support this strategy include : creating customer value from planning to service; continuous lifestyle research according to customer value; maintaining original development ability for the next 55 years through 5 life science laboratories, 10 planners, 9 designers, and 370 development engineers; flexible production through small-quantity small-variation manufacturing with minimal inventory and reduced lead time; a strong sales network composed of 800 mass merchandisers and 1,000 department stores; and lastly, an excellent customer service system.

Panasonic recycles parts and products with other Taiwanese manufacturers through a central company. This is in accordance to Taiwan government regulations practiced since 1998. Panasonic's other environmental efforts include developing products with lower electrical consumption, using refrigerant with lower global warming effect, using refrigerators with lower

heat invasion from external environment, and eliminating hazardous substances through X-ray and external agency inspections

Artificial Intelligence (AI) and Internet of Things (IoT), though not extensive, are implemented in the factory through cameras and sensors installed along the warehouse and production areas. This is to aid workers in visualizing good parts, preventing human errors, and addressing traceability concerns. Sensors are used to collect data on cycle time to determine process bottlenecks, alert personnel on time delays, adjust conveyor speed, and visualize cycle time. In addition, SPC detection equipment monitors UCL and LCL trends in production and triggers sound alarm or flashlight signals in case of problems.

Chung Yuan Christian University

Next stop was Chung Yuan Christian University, an accredited AACSB institution. Discussion was conducted with Dean Alex Liu of the College of Business, Dr. Yufang David Chiu, Dept. Head of the IE department and 10 other CYCU professors led by Prof. John Francis Diaz who is also a Filipino.

All of the CYCU professors are active in research activities. Motivation is the main research incentive as well as collaboration with the R & D office. Incentive is given 6 to 7 months after the research paper is published (Mid-tier Journal – NT30,000, High tier Journal – NT60,000, Low tier Journal – NT10,000). The Center provides initial funding and encourages research involving highly specific topics. The scholar is also provided with opportunities to connect with other research centers abroad.

CYCU offers scholarships assisted by the Taiwan

government for short term courses of 1 to 3 months. Applications are accepted in November each year.

Faculty exchange is not easy now as all CYCU faculty members are busy. But visiting Ateneo professors for joint research are welcome.

CYCU's methods of teaching are varied; online courses are employed in conjunction with face-to-face class sessions. If a student misses a session, he must watch the video of the lesson to catch up. In an online course, one-third of the sessions are still face-to-face actual class sessions. It turns out that most students still prefer face-to-face classes. Online courses are mainly used for long-distance learning. Some classes mix postgraduate and junior students. They, however, have different assignments and reports. Postgraduate students are given the chance to develop their leadership skills while junior students get a glimpse of their future in academics or work.



A new course called "International Master of Business Administration" (IMBA) was established in CYCU. The courses offered in IMBA are supported by CYCU's five major departments. Courses are handled by professors with PhDs and conducted in English. In fact, English proficiency was considered in recruiting faculty. The student may choose 19 credits for electives and must take 17 required credits, plus thesis which is 6 credits for a total of 42 credits to complete the course. The student's major will be based on the electives taken. .

Budget was the most important aspect in setting up the program. The course was advertised by sending letters, visiting schools in Asia, and promoting education exchange through Facebook, YouTube, and various social media ads..

Of course, a visit to any country is not complete without visiting the tourist attractions. The professors found time to go on a "Hop-On-Hop-Off" bus tour around Taipei. They also managed to sneak in a visit to John Bosco Church, a train ride to Taroko Gorge, and a whisky tasting tour at Yilan Kavalan Whisky Distillery.



DOIT FACULTY DEVELOPMENT TOUR IN TAIWAN



Contributors

Everyone on the list is currently taking up or has completed his/her Master's Degree in Business Administration at the Ateneo Graduate School of Business (AGSB).

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Joy Cuison has 20 years in IT and Business operations. He engaged in software development for British-owned Wallem for their ship management software and managed the Philippine operations of CyberMetrics in developing Facilities Management software solutions. He also served as CTO and Country Manager of Cloudstaff. He earned his Bachelor's degree in Computer Science at University of Baguio. He now serves as President of MetroClark ICT Council, President of AGBS Clark Student Council, and CEO and President of PABACUS Fintech Asia.

Desiree David is a graduate of BA Business Economics at the University of the Philippines. She is a Procurement Officer for Texas Instruments Philippines and serves roles on SAP MRP Systems and Supplier Quality Management. Desiree has also earned a professional certification on supply chain management (ITC's International Certificate on Supply Chain Management).

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John Estano is a Technical Sales Manager for Coil Coatings of Akzo Nobel. He manages Philippine sales and attends to technical inquiries.

Orange Garcia is a social entrepreneur who believes in harnessing the power of education for nation-building. He currently serves as the President and CEO of the company featured in this article for the past decade, turning it from an ailing educational institution to one of the leading schools in its city.

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Valerie Ong is an accountant by profession. She works for the United Nations as Finance and Administrative Affairs Manager of United Nations Human Settlements Programme (UN-Habitat), Philippines.

Erika Pangan

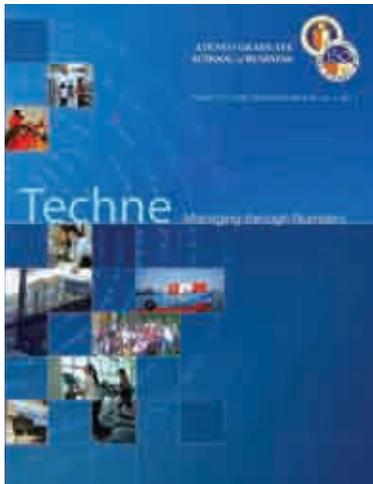
Jeffrey Pundanera is a professional communicator specializing on public relations and stakeholder relationship management. He is currently a Senior Manager for Corporate Communications of Manila Water Company, Inc.

Evena Flor Santos

Cristina Turla is a licensed Certified Public Accountant (Philippines) and Certified Management Accountant (Australia). She works as the Assistant Vice President for Finance at Supercare Medical Services, Inc.

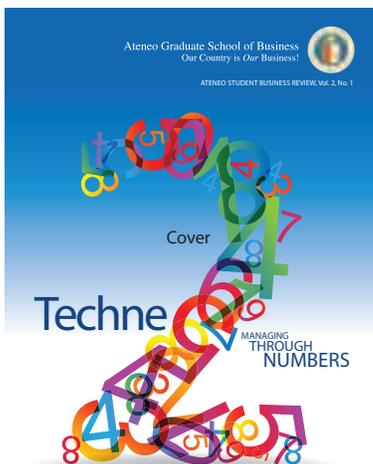
RJ Zabala is an accountant by profession. He currently serves as the Finance Head & Treasurer of Prople BPO, Inc.

Previous Techne Issues



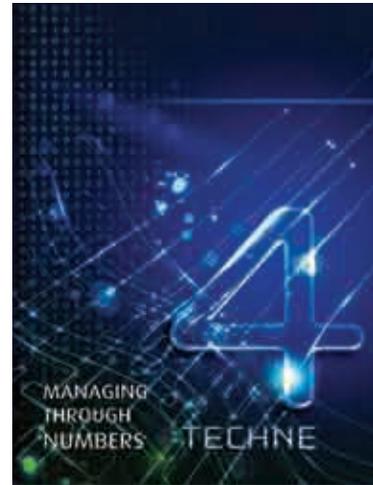
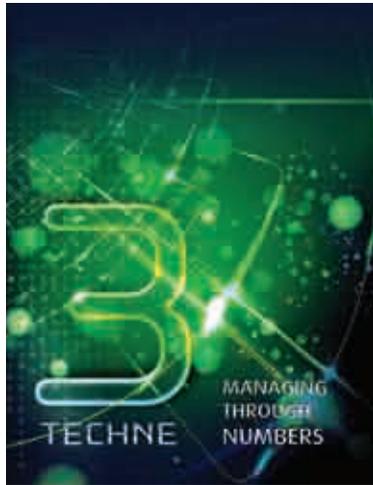
Techne 1

The maiden issue of Techne features six articles that discuss management science applications in small- and medium-sized enterprises, as well as in large-scale undertakings in the private and public sectors. The applications employ widely useful management science tools, such as linear programming, queuing, and simulation. The issue reflects the high quality of student understanding as well as their pragmatic bent.



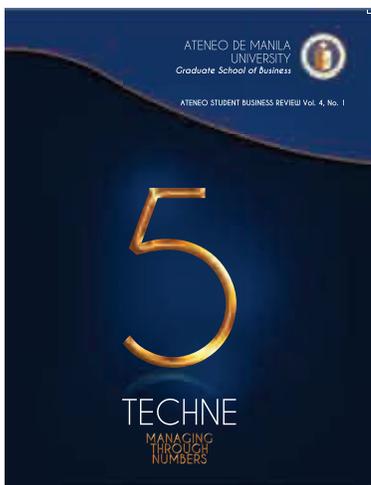
Techne 2

The second issue features seven articles that apply quantitative methods to arrive at efficient and effective decisions and interpret common activities such as buying toys, raising funds, or joining a volunteer program, and translate them into mathematical models. The issue also focuses on topics on environment, scheduling, business management, and health. Optimization is also highlighted in all of its articles.



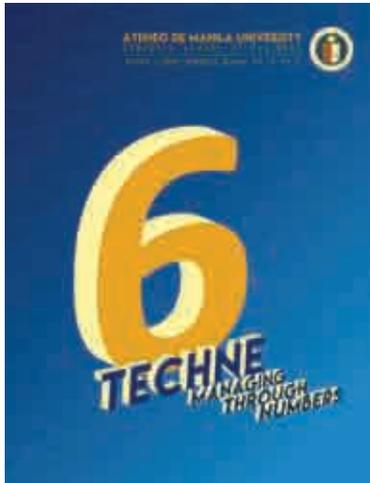
Techne 3 and 4

The third and fourth issues combine as a double back-to-back issue with a total of 13 articles covering technical applications for large corporations, government, schools, SMEs, entrepreneurs, and CSR initiatives. Articles discuss the best way to move people and things, reduce time, optimize resources, and justify green initiatives (the focus of Techne 3) backed by the use of mathematical tools such as Monte Carlo simulation, linear programming, linear regression, queuing models, project management, inventory management, integer programming, process improvement, and quality management.



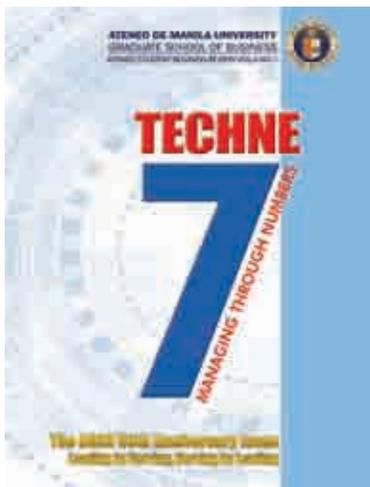
Techne 5

This issue features six articles written for the operations management course with focus on systems and the goal of seeking the one best way to do things. Logical processes such as fishbone diagrams, Pareto charts, poka-yokes, process flow diagrams, time and motion studies, facility designs, and layouts were applied by the authors on varied scenarios that include preparing burgers and setting up a feeding program for school children, organizing career development sessions and institutionalizing enterprise resource planning, operating a radiology department, and using biometrics.



Techne 6

The sixth issue features seven articles touching on various aspects of our lives, from milk matters for infants and books for elementary school kids to projects for professionals and enrollment tips for graduate students, a fitting tribute to our goal of nation-building and being a man for others. It highlights our students' expertise in the operations field shown by their innovative use of the various management tools and techniques in various projects and research.



Techne 7

The seventh issue features six articles with varied interests: examining the effectiveness of the Ateneo Blue Plate feeding program, improving a local health clinic, tackling the sustainability issue in the fashion industry, and applications to nation building using various tools of management science and operations management.



