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### Mining the richness of digital chat transcripts – An SMU Libraries experience in connecting with our community

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# Mining the richness of digital chat transcripts : An SMU Libraries experience in connecting with our community



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# Singapore Management University (SMU) - By Numbers

## Academic Programmes

Today, SMU comprises of six schools:

Lee Kong Chian School of Business

School of Accountancy

School of Economics

School of Computing and Information Systems

School of Law

School of Social Sciences

SMU offers a wide range of bachelors', masters' and PhD degree programmes in the disciplinary areas associated with the six schools, and a growing number of executive development and professional programmes.

### Our Students

# 9,144

full-time undergraduates\*

# 2,477

full-time & part-time  
postgraduates\*

\* As of 14 September 2020

### Our Graduates

# 22,800

undergraduate and  
postgraduate alumni

# 58%

international postgraduate  
students [non-Singapore  
citizens] from **50 countries\***

# 8%

international undergraduate  
students [non-Singapore  
citizens] from **28 countries\***

\* As of 16 October 2020

# SMU Libraries



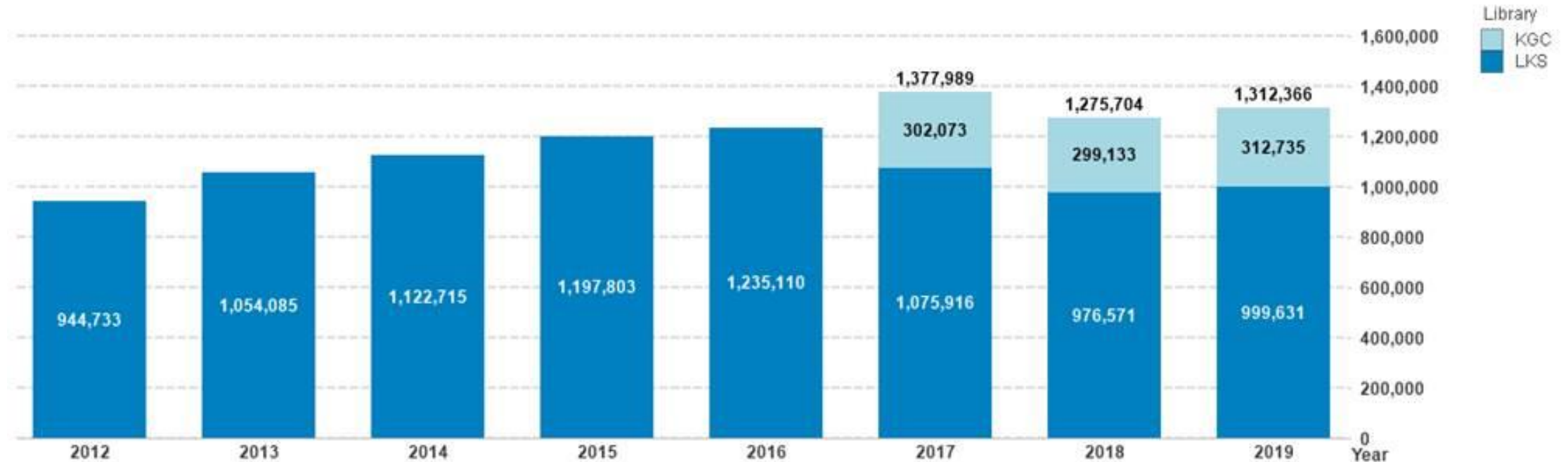
**Li Ka Shing Library**



**Kwa Geok Choo Law Library**

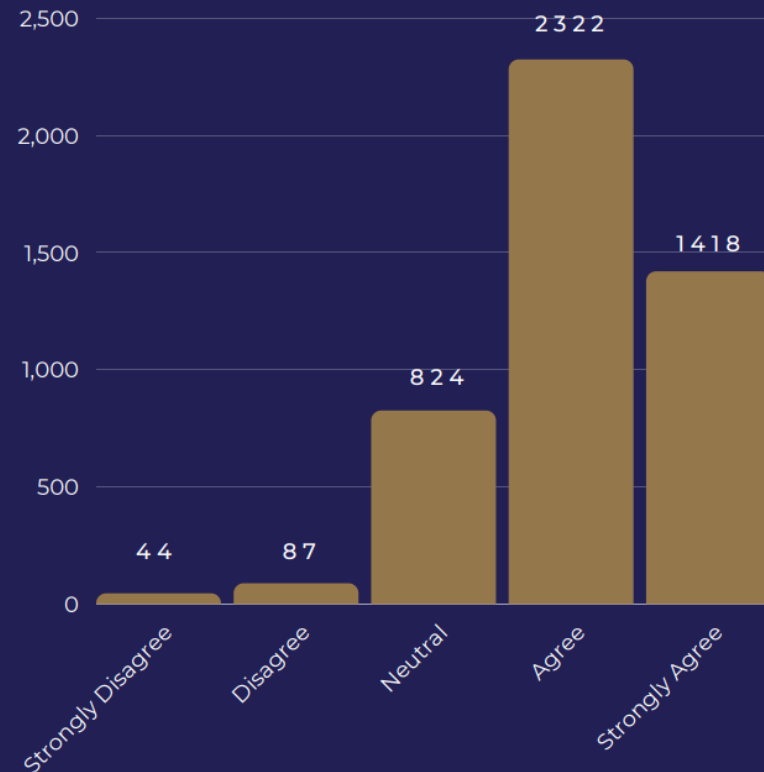
# Library Visitorship Through The Years

Library Visitorship (People Counter)

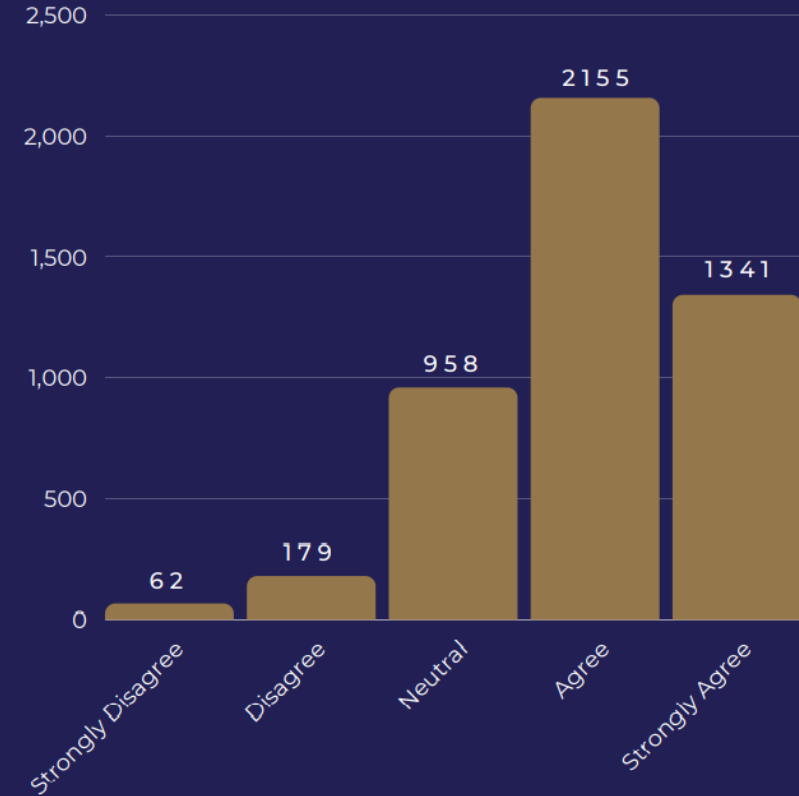


# SMU Libraries – Learning Space & Learning Partner

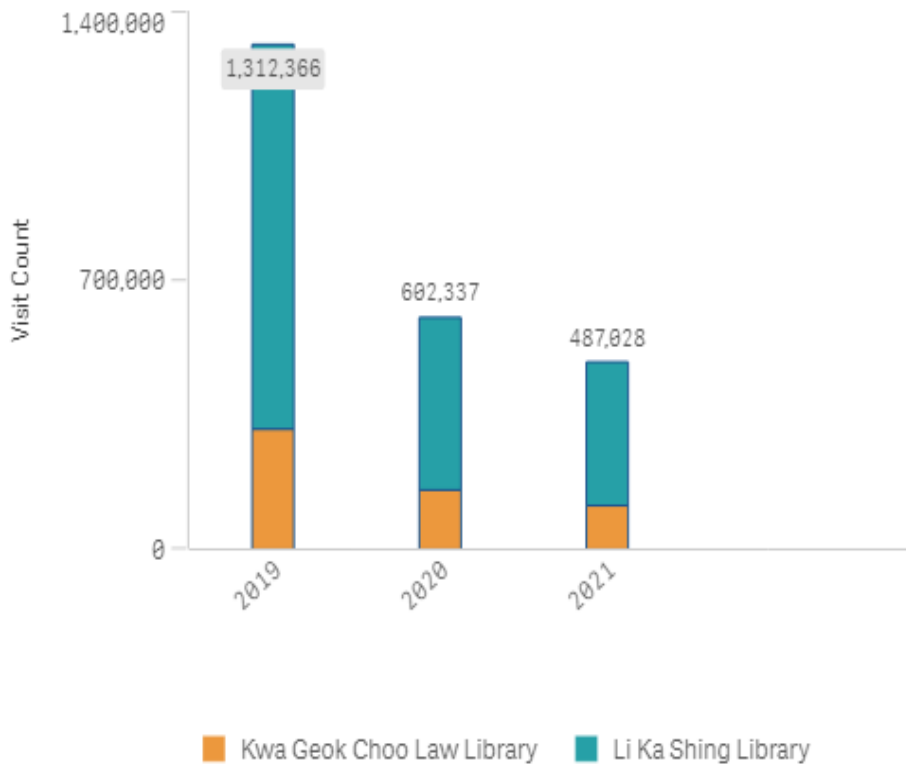
The Library (services, space, workshops and resources) has helped me positively in my studies.



The Library is a place where I feel connected to and part of University life.

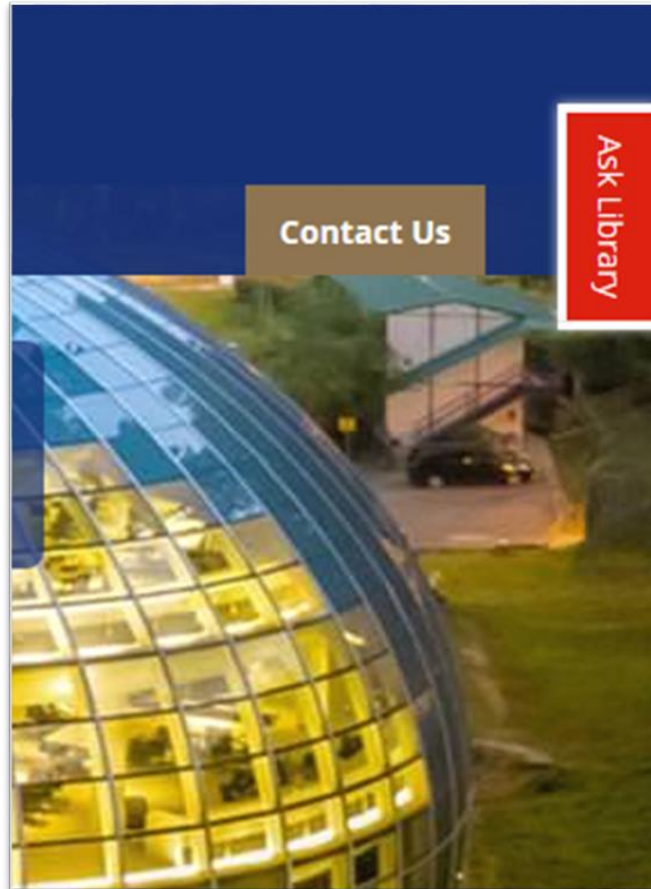


# 2020: Covid-19 And Its Impact





# Enhancing And Expanding Our Virtual Chat Service



Ask us questions via **Email** or use our '**Ask Library**' Chat Service:

Mon - Fri: 8:30 AM - 10 PM

Sat: 10 AM - 9 PM

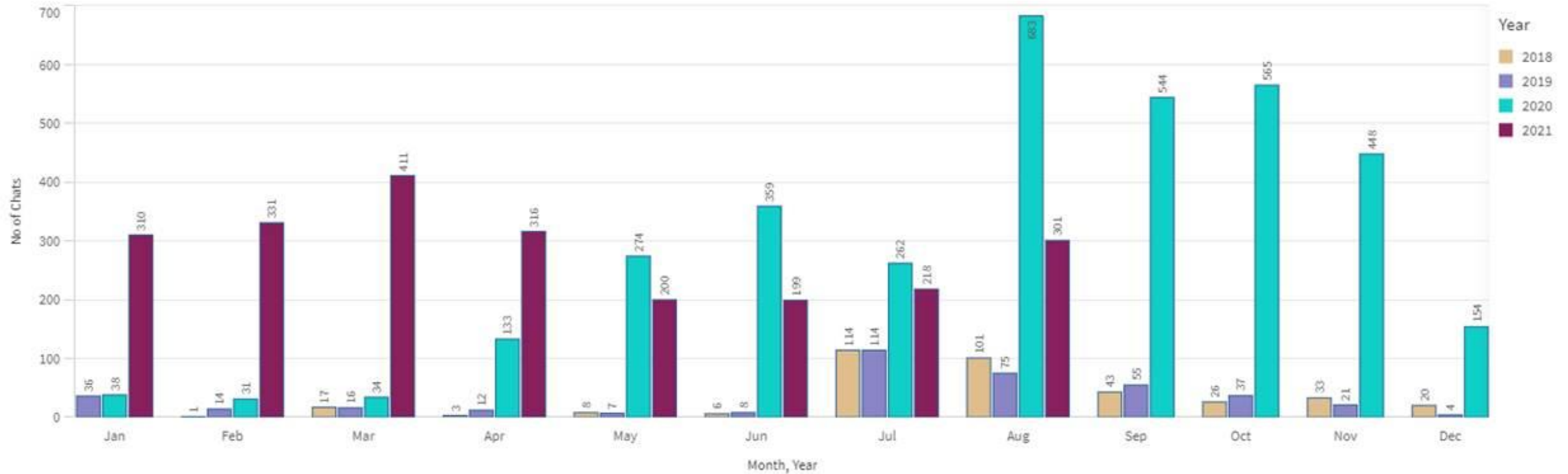
Sun: 1 PM - 9 PM





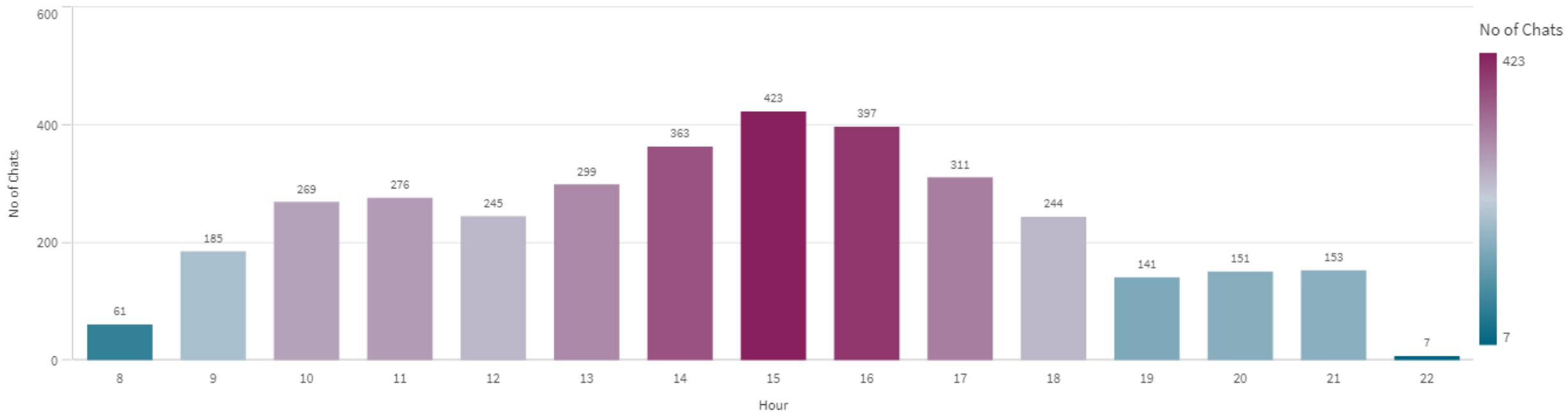
# Chat Transaction Trends: 2018 - 2021

Chats Quantitative Comparison



# Chat Volume Trends: By Hour

No of Chats by Hour for Year 2020



# Paving The Way To A Data-Informed Approach

- Resource Intensive - Quantitative data
- Knowledge Intensive - Anecdotal evidence
  
- But how do we know –
  - that the community is receiving the right help at the right time?
  - that SMU Libraries staff manning the service has access to the right training to provide value to their community?
  - that SMU Libraries would be able to sustain the service and right-size it depending on the needs of the community?



# PART I : HOW?



# Testing Waters: Proof Of Concept

Visualizing chat transcripts is initially roll out as a Proof of Concept (PoC) project. The system is built base on Extract, Transform, Load and Security (ETLS) rules.

# Beyond Numbers: Possibilities

## Quantitative Measures

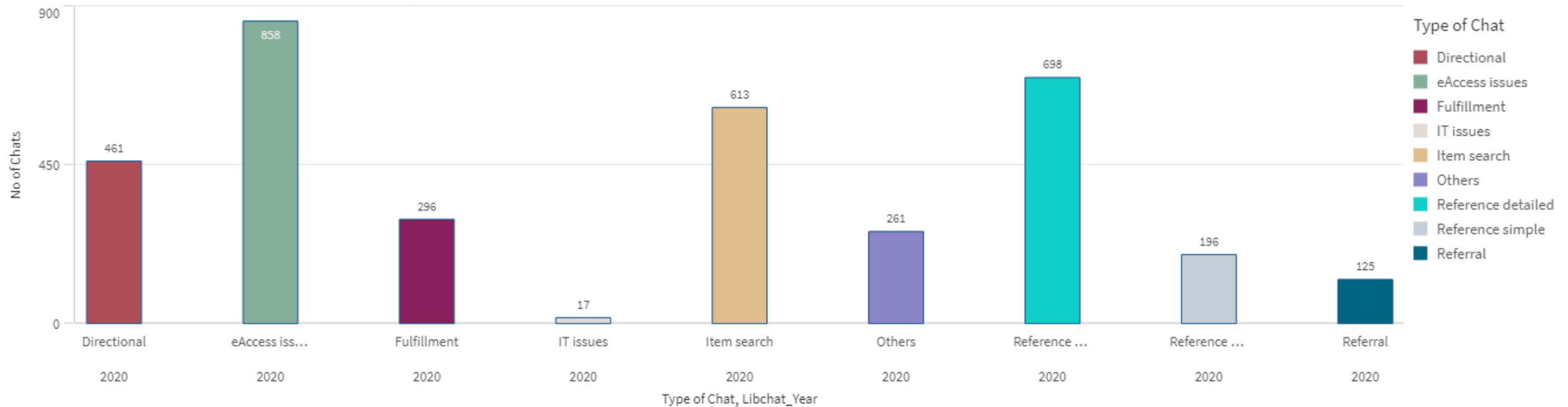
- Chats per month
- Chats per hour
- Chats Quantity Comparison by Month & Year
- Chat Ratings & Quantity by User Group
- Chat Ratings & Quantity by School
- Chat Ratings by Year
- Chat Launch Location
- Browser usage
- Patron Comments

- Classification of Chats (Machine Learning)
- Chat Index (Predictive)
- Transcript Summary & N-gram (Machine Learning)

## Qualitative Measures

# Chat Classification By Machine Learning

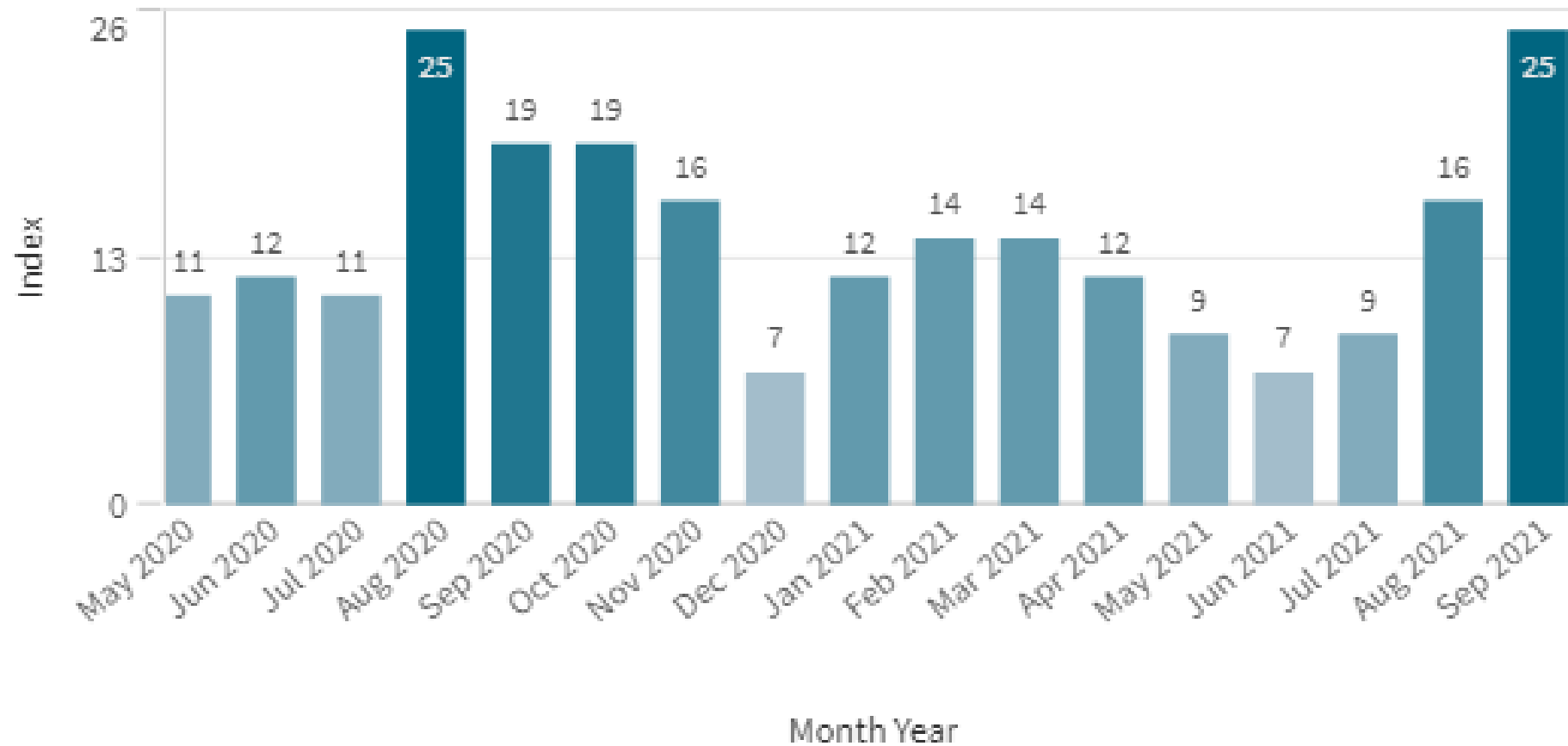
Classification of Chats for Year 2020





# Chat Index By Predictive Analysis

## Chat Index



# Transcript Summary By Machine Learning

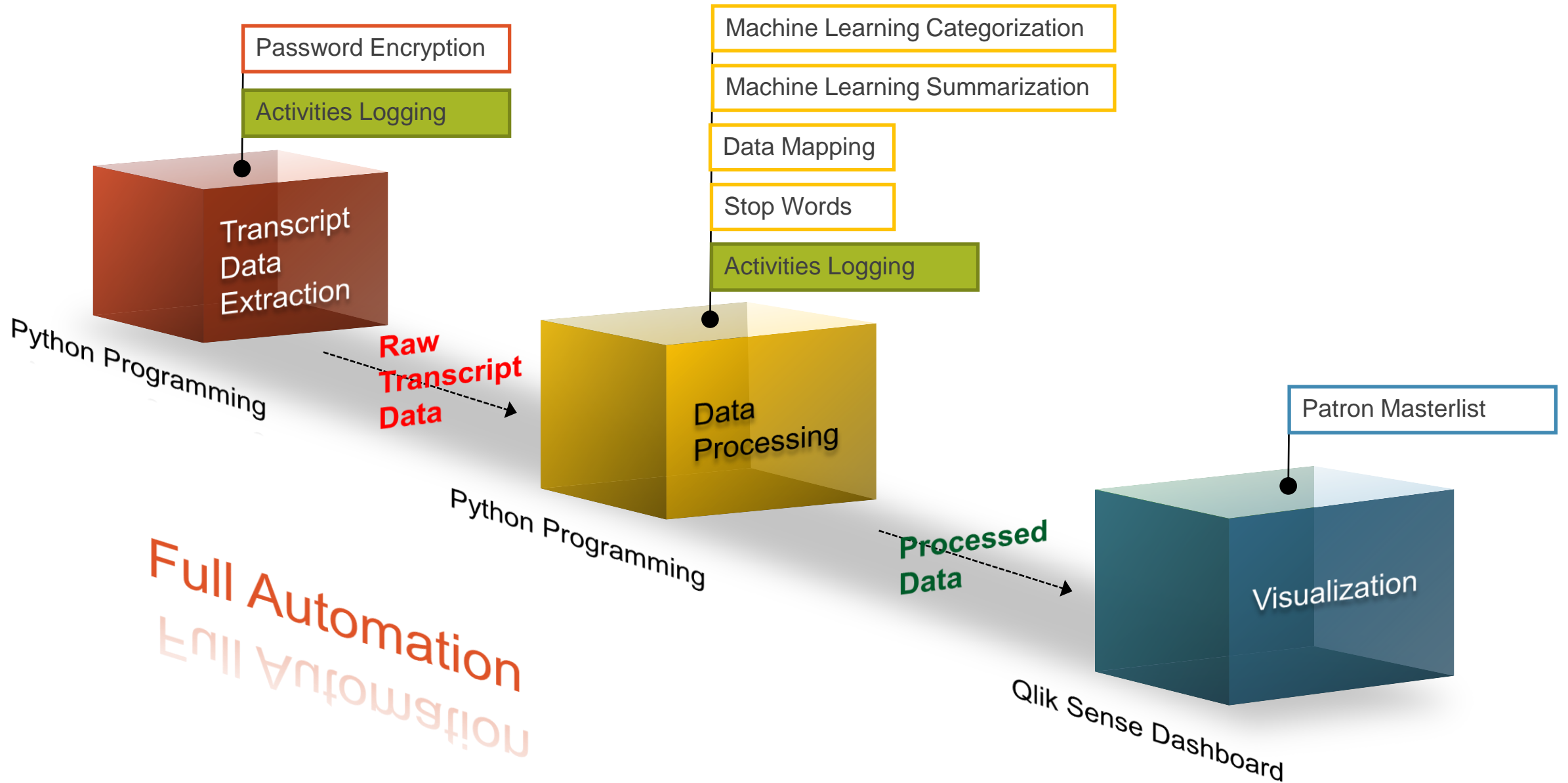
Transcript Summary
How long does a request to get the 6th edition of persuasion: social influence and compliance gaining into our library take?
Yes, i need to access some of the databases to access some research papers.
I remember there is a certain keyword search algorithm in the library search function but no worries, i can try to search around for
Yes money business: swinging through the wall street jungle i want to borrow a hard copy to read in my free time, is that possible
Hi, i am trying to access wsj online, but it is saying that my membership has expired thank you i have a class at 7:15pm, so need a
Hi i'm trying to find fundamentals of criminal law cases and materials by chan wing cheong but there seems to only be a physical c
Hi, may i know what are some useful sources for research on stays of civil proceedings?
Hi wanted to check if you're able to access this article?
Hi, just want to check whether this book is available for loan?
Hi may i know whether i can go down to the smu lib on fri to print some lecture notes?
I was wondering if it is possible to log into the economist app using the school subscription.
Hi i need help to access some of the following articles: oops sorry let me send it one by one so it's clearer crisis leadership: an ev
Hi i am unable to access lawnet when i search something i am directed to an error page ok thank you i am using safari and i am se
I would like to ask if there are photocopier services in smu li ka shing library and in kwa geok choo librray ?
Twelve tips to manage a breaking bad news process: using s-p-w-ice-s a revised version of the spikes protocol thank you going ye
I was wondering whether we are allowed to borrow a physical book that's available from the liibrary was wondering whether we
The law of unjust enrichment im directed to an online version on thomson reuters proview, but i would like to download it if pos
The title is what the numbers mean written by david marshall the cover page contains mahjong pictures is there a time limit to us
This is the article i am trying to fing find* this page does not allow me to download thus i am trying to find it under smu lib resourc
The book i'm looking for is artificial intelligence: a modern approach (3rd ed) by russell stuart and peter norvig
Apa style does not seem to guide on this so there is only one bracket and not multiple brackets separated by a semi colon is the a
I tried using the link to register from a 2018 post on the smu website but the link does not work ok ill try that now the one time re

# The “Nuts And Bolts”

## ***Development***

1. Chat Transcript data extraction (Extract Process)
  - Developed in Python Programming
  - Extraction Data in year by year basis
  - Password Encryption
  
2. Data Processing (Transform Process)
  - Developed in Python Programming
  - Transcript Categorization by Machine Learning
  - Transcript Summarization by Machine Learning
  - Data Mapping
  
3. Data Visualization (Load & Security Process)
  - Developed in QlikSense Dashboard (Responsive Data Analytics Platform)
  - Chat Index Implementation

# System Diagram



# **PART II : SO WHAT?**

# Benefits To The Community

The community is receiving the right help at the right time

Predictive modelling aligned to academic calendar

Best practices for peer learning

SMU Libraries would be able to sustain the service and right-size it depending on the needs of the community

Staffing Models

Upskilling opportunities

SMU Libraries staff manning the service has access to the right training to provide value to their community



***Thank you for your  
attention 😊***