BCA VI SEM

BUSINESS INTELLIGENCE

UNIT – V
BASICS OF ENTERPRISE REPORTING

PRESENTATION BY :
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SYLLABUS

RANI CHANNAMMA UNIVERSITY, BELAGAVI

17BCAECOT63: Business Intelligence	
Teaching Hours: 4 Hrs/week	Marks: Main Exam: 50
	IA: 20

Unit I: Business View of Information Technology applications: Business Enterprise Organization , Its functions, and core business process, baldrige business excellence frame work (Optional reading) Key purpose of using IT in business, The connected world : Characteristics of Internet _Ready IT Applications, Enterprise applications(ERP/CRM) and bespoke IT applications, information users and their requirements, Types of digital data , structured data , unstructured data, Semi-structured data , Difference between semi structured and structured data. 10   Hrs

Unit II: Introduction to OLTP and OLAP : OLTP(online transaction processing) OLAP(online Analytical Processing) Different OLAP   Architectures , OLTP and OLAP, Data models for OLTP and OLAP, Role of OLAP tools in the BI Architecture , should OLAP be performed directly on operational data bases. Business intelligence: Using analytical information of decision support, Information sources before dawn of BI , BI defined , evolution of BI and role of DSS , EIS, MIS and digital dash boards, Need for BI at virtually all levels , BI for past , present and future, The BI value Chain , Introduction to Business analytics. 08 Hrs

Unit III:BI definitions and concepts : BI component Framework , BI Users, Business Intelligence Applications, BI roles and responsibilities, Basics of data integration , Need for data Warehouse ,Definition of data Warehouse, ODS, Ralph Kimball's Approach vs Inmon's Approach , Goals of data warehouse, Constituents of data Warehouse , Data integration, Data integration technologies , Data Quality , Data Profiling, A case Study from the Healthcare Domain. 10 Hrs

SYLLABUS

Unit IV:Types of Data Model: Data Modelling techniques, Fact table, Dimension table, Typical dimensional Models, Dimensional Modelling Life cycle, Understanding Measures and performance measurement System terminology , navigating a Business Enterprise.   10 Hrs

Unit V:Basics of Enterprise Reporting: Reporting perspectives common to all levels of Enterprise, Report Standardization and Presentation practices, Enterprise Reporting characteristics in OLAP World , Balanced score card , Dash boards.   10 Hrs

Text Books:

1. R.N.Prasad, Seema Acharya , Fundamentals of Business analytics, First Edition , 2011, Wiley-India

Reference Books:

1. GaliShmueli,. Nitin R Patel , peter C . Bruce, " Data mining for Business Intelligence" Wiley-India, 2011.
2. Ralph Kimball ,Margy Ross, "Practical tools for Data Warehosuing and Business Intelligence" , second Edition Wiley-India 2011.

REPORTING IS ONE OF THE INTEGRAL PART OF OLTP SYSTEMS

BASICS OF ENTERPRISE REPORTING

- REPORT STANDARDIZATION

- REPORTING PERSPECTIVES

- FEATURES OF GOOD REPORTING

REPORT STANDARDIZATION

- DATA STANDARDIZATION - fact based

- CONTENT STANDARDIZATION - relevant content

- PRESENTATION STANDARDIZATION - formats

- METRICS STANDARDIZATION - units

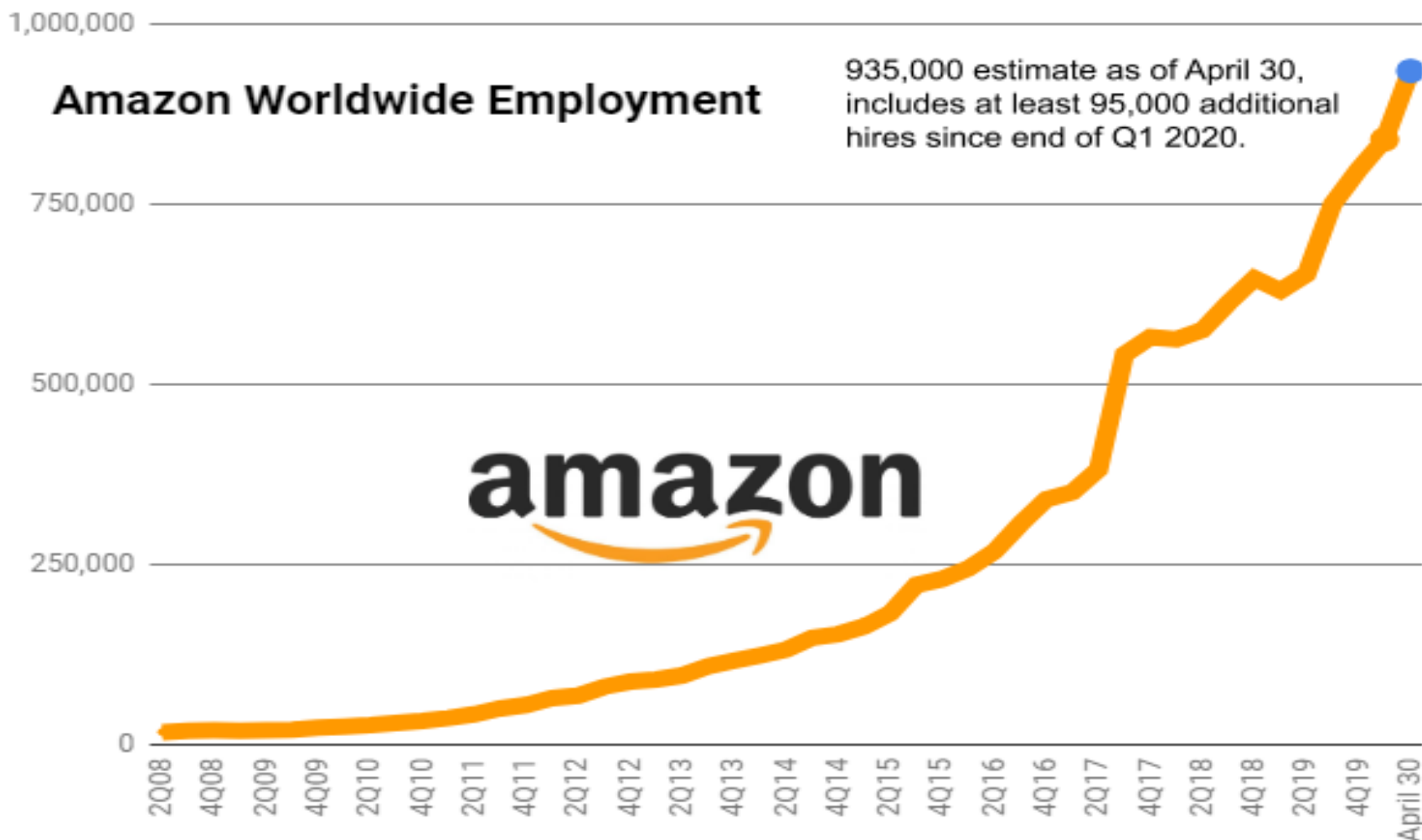- REPORTING TOOLS STANDARDIZATION - tools

REPORTING PERSPECTIVES

- FUNCTIONAL LEVEL – DEPARTMENTAL REPORTS, IN DIFFERENT LANGUAGES
- ANNUAL REPORTS
- ROLE BASED
- SUMMARY/DETAILED
- STANDARD/AD HOC
- PURPOSE
- TECHNOLOGY CENTRIC – PAPERLESS REPORTS, PREFFERED FORMATS

FEATURES OF GOOD REPORTING

- TITLE - should reflect its purpose
- HEADER/FOOTER - logo, page number, .. etc
- REPORTING PERIOD - from date - to date
- COLUMN HEADINGS - user friendly headings
- FILTERS - profit in region="south"
- SORT SEQUENCES - revenue report in decreasing order of amount
- TOTALS/GROUP TOTALS - helps in quick analysis
- DATA FIELD FORMATTING - date may be MM/DD/YY
- HIGHLIGHTING - needed to grab attention
- NOTES -

REPORT DELIVERY FORMATS

- PRINTED REPORTS - used when essential

- SECURE SOFT COPY - UNEDITABLE PDF, ZIP, PASSWORD PROTECTED

- EMAIL ATTACHMENTS

- LINK TO REPORTS

- EBOOKS

- PPT, WORKSHEETS

Amazon Worldwide Employment

935,000 estimate as of April 30, includes at least 95,000 additional hires since end of Q1 2020.

amazon

1,000,000	
750,000	
500,000	
250,000	
0	

2Q08 4Q08 2Q09 4Q09 2Q10 4Q10 2Q11 4Q11 2Q12 4Q12 2Q13 4Q13 2Q14 4Q14 2Q15 4Q15 2Q16 4Q16 2Q17 4Q17 2Q18 4Q18 2Q19 4Q19 April 30

GEEKWIRE

VIVO IPL AUCTION 2018
— PLAYER COUNT —

vivo IPL AUCTION

Pie chart values: 360, 54, 41, 34, 24, 24, 18, 10, 6, 4, 1, 1, 1

Legend:
- IND
- WI
- SL
- ZIM
- AUS
- ENG
- AFG
- CAN
- SA
- NZ
- BAN
- IRE
- NEP

TOTAL PLAYERS GOING UNDER THE HAMMER 578

MAXIMUM PLAYERS THAT CAN BE BOUGHT 182

CAPPED PLAYERS

BASE PRICE	TOTAL	INDIAN	OVERSEAS
2 CR	36	13	23
1.5 CR	32	5	27
1 CR	31	9	22
75 L	23	5	18
50 L	121	30	91
TOTAL	243	62	181

UNCAPPED PLAYERS

BASE PRICE	TOTAL	INDIAN	OVERSEAS
40 L	14	8	6
30 L	18	10	8
20 L	301	280	21
TOTAL	333	298	35

ASSOCIATE PLAYERS*

BASE PRICE	TOTAL	INDIAN	OVERSEAS
20 L	2	0	2

*Includes Players From Canada & Nepal

ENTERPRISE REPORTING CHARACTERISTICS IN OLAP WORLD

Enterprises invest money and efforts to help decision makers gain access to the right info at right time on the right device.

Some of critical area focuses of enterprise reporting are :

- SINGLE VERSION OF TRUTH
- ROLE BASED DELIVERY
- ANYWHERE/ANYTIME/ANY-DEVICE DELIVERY
- PERSONALIZATION
- SECURITY
- ALERTS – KPI's through email, sound, graphic, SMS alerts, Popup.

COMMON REPORT LAYOUT TYPES

- TABULAR REPORTS - have rows, columns, header, footers, total, sub totals

- MATRIX REPORTS - has aggregated (summarized) information

- LIST REPORTS

- CHART REPORTS - has graphical information

- GAUGE REPORTS – shows gauge controls

TABULAR REPORT

Department Id	Department Name	Manager Id	Location Id
10	Administration	200	1700
20	Marketing	201	1800
30	Purchasing	114	1700
40	Human Resources	203	2400
50	Shipping	121	1500
60	IT	103	1400
70	Public Relations	204	2700
80	Sales	145	2500
90	Executive	100	1700
100	Finance	108	1700
110	Accounting	205	1700

GAUGE REPORT

POOR   GOOD
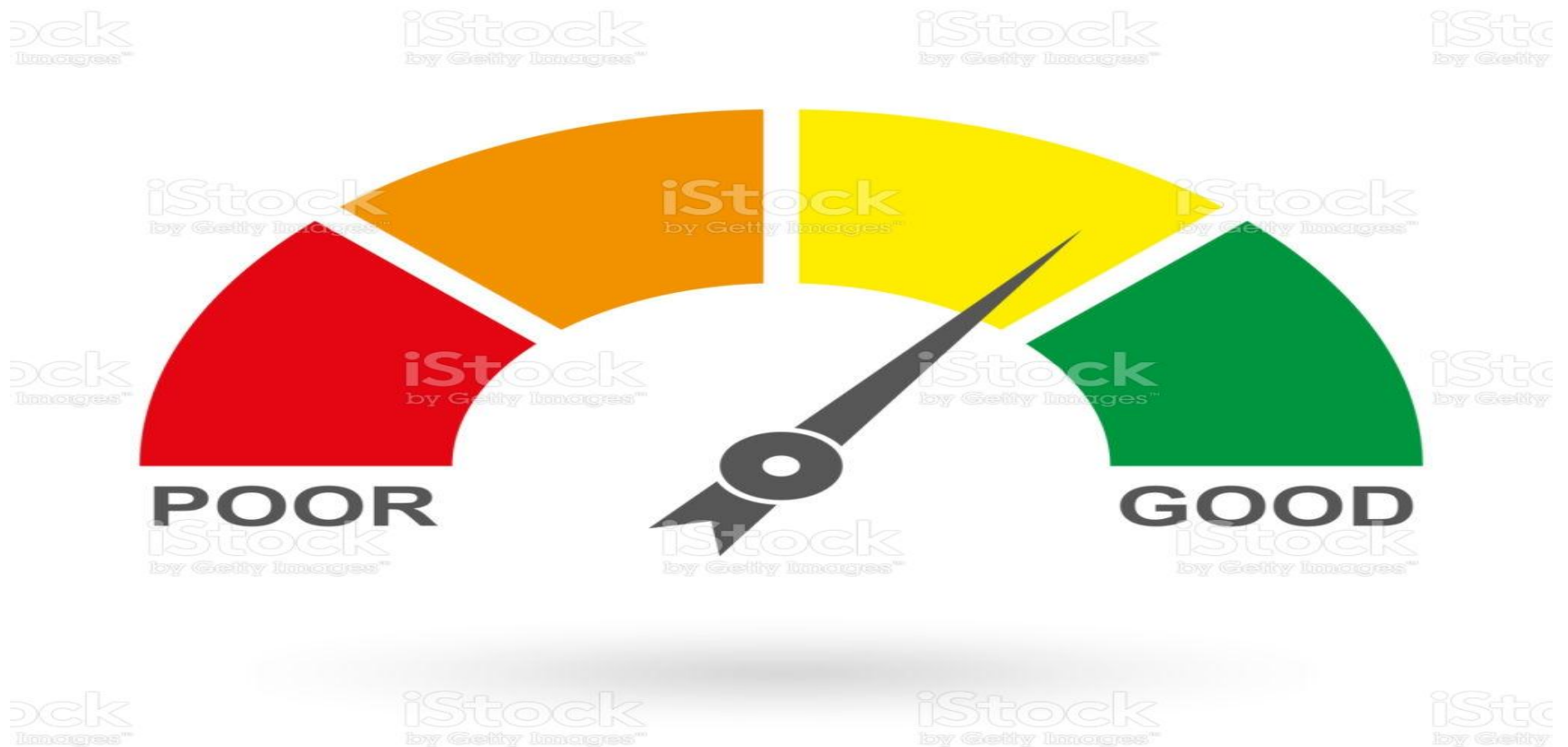
GAUGE REPORT

Regional Sales
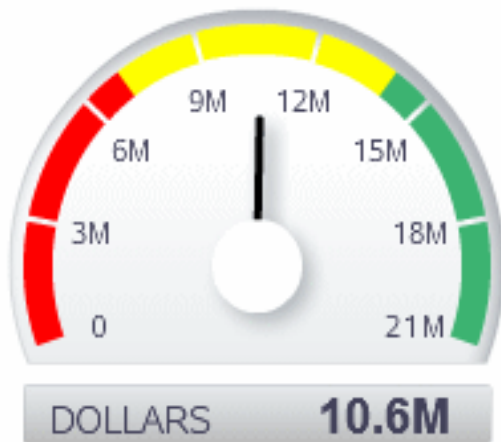
South — DOLLARS **10.6M** — Southern Region Goal: $15,000,000
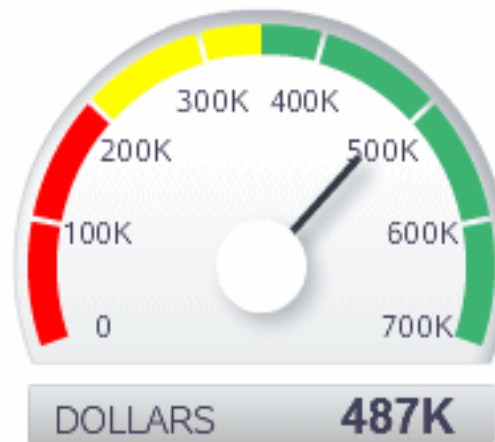
Web Direct — DOLLARS **487K** — Web Direct Region Goal: $400,000
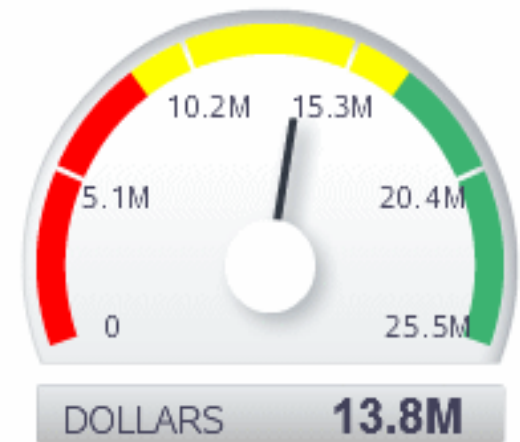
East — DOLLARS **13.8M** — Eastern Region Goal: $18,000,000

CHART REPORT

Weekly Revenue Sales Report
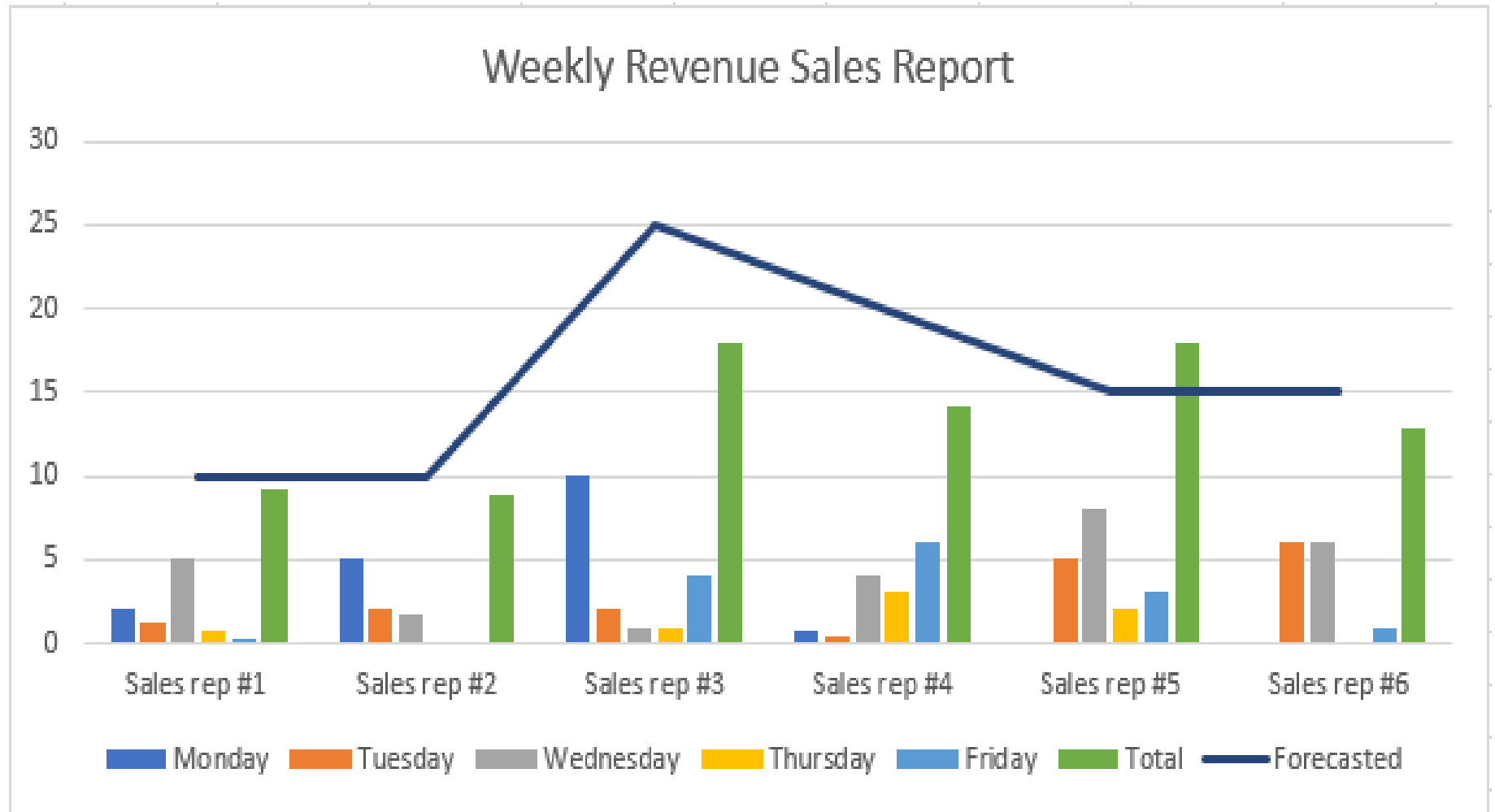
CHART REPORT

Break -up of total revenue.

M 800   Esteem   Zen   Omni   Alto

48%
17%
3%
21%
11%
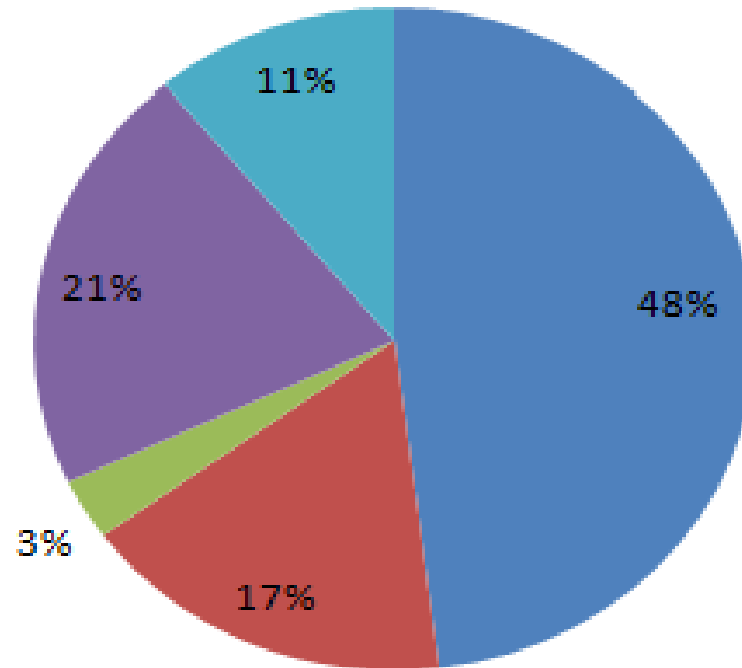
BALANCED SCORECARD

- IT IS A MANAGEMENT SYSTEM
- HELPS TO REACH GOALS/VISION OF ORGANIZATION
- HELPS TO IMPROVE PERFORMANCE OF THE ORGANIZATION
- HELPS TO MONITOR ORGANIZATION'S PERFORMANCE
- PROVIDED BY Dr. ROBERT S.KAPLAN, DAVID P. NORTON IN 1992

PERSPECTIVES OF BALANCED SCORECARD

- FINANCIAL PERSPECTIVE

- CUSTOMER PERSPECTIVE

- INTERNAL BUSINESS PERSPECTIVE

- LEARNING AND GROWTH PERSPECTIVE

BALANCED SCORECARD

Financial Perspective
- Revenue
- Expenses
- Net Income
- Cash Flow
- Asset Value

Customer Perspective
- Customer Satisfaction
- Customer Retention
- Market Share
- Brand Strength

Internal Process Perspective
- Inventory
- Orders
- Resource Allocation
- Cycle Time
- Quality Control

Learning / Growth Perspective
- Employee Satisfaction
- Employee Turnover
- Employee Skills
- Employee Education

- Improve cash flow
- Decrease infrastructure expenditure
- Increase project profits

Financial

Customer

- Increase customer satisfaction
- Grow market share
- Improve survey results

Learning & Growth

Internal Processes

- Invest in employee training
- Performance reviews
- Education grants

- Decrease call wait times
- Improve Safety Index
- Minimize rework

Balanced Scorecard Measurements

Perspective	Generic Measurements
Financial	Return of Capital Employed, Economic value added, Sales growth, Cash flow
Customer	Customer satisfaction, retention, acquisition, profitability, market share
Internal business process	Includes measurements along the internal value chain for: Innovation - measures of how well the company identifies the customers' future needs. Operations - measures of quality, cycle time, and costs. Post sales service - measures for warranty, repair and treatment of defects and returns.
Learning and growth	Includes measurements for: People - employee retention, training, skills, morale. Systems - measure of availability of critical real time information needed for front line employees.

CORPORATE DASHBOARDS

- THE **ENTERPRISE DASHBOARD** IS A VISUAL REPORT SHOWING CHARTS AND LISTS OF EXPENSE INFORMATION

- IT IS HELPFUL FOR A QUICK, OVERALL SNAPSHOT OF DATA AT ANY GIVEN TIME, WITHOUT NEEDING LINE-BY-LINE DETAIL

- DASHBOARDS ENABLE TRUE ASSESSMENT OF BUSINESS AND PERFORMANCE

CORPORATE DASHBOARDS

- A WELL CONSTRUCTED CORPORATE DASHBOARD ANSWERS FOUR BASIC QUESTIONS :
- **WHERE?**
- **WHAT?**
- **HOW?**
- **WHY?**

CORPORATE DASHBOARDS

- **DASHBOARDS HELPS IN**

- **BETTER ANALYSIS**

- **BETTER TRACKING**

- **PROACTIVE ALERTING**

The Complete Car Dashboard Light Guide

1) Fog light (front)
2) Power steering warning light
3) Fog light (rear)
4) Washer fluid low
5) Brake pad warning
6) Cruise control on
7) Direction indicators
8) Rain and light sensor
9) Winter mode
10) Information indicator
11) Glow plug/diesel pre-heat warning
12) Frost warning
13) Ignition switch warning
14) Key not in vehicle
15) Key fob battery low
16) Distance warning
17) Press clutch pedal
18) Press brake pedal
19) Steering lock warning
20) Main beam headlights
21) Tyre pressure low
22) Sidelight information
23) Exterior light fault
24) Brake lights warning
25) Diesel particulate filter warning
26) Trailer tow hitch warning
27) Air suspension warning
28) Lane departure warning
29) Catalytic converter warning
30) Seat belt not on
31) Parking brake light
32) Battery/alternator warning
33) Parking assist
34) Service required
35) Adaptive lighting
36) Headlight range control
37) Rear spoiler warning
38) Convertible roof warning
39) Airbag warning
40) Handbrake warning
41) Water in fuel filter
42) Airbag deactivated
43) Fault problem
44) Dipped beam headlights
45) Dirty air filter
46) Eco driving indicator
47) Hill descent control
48) Temperature warning
49) ABS warning
50) Fuel filter warning
51) Door open
52) Bonnet open
53) Low fuel
54) Automatic gearbox warning
55) Speed limiter
56) Suspension dampers
57) Oil pressure low
58) Windscreen defrost
59) Boot open
60) Stability control off
61) Rain sensor
62) Engine/emissions warning
63) Rear window defrost
64) Auto windscreen wiping

CORPORATE DASHBOARDS

- **DASHBOARD IS A GRAPHICAL USER INTERFACE THAT ORGANIZES AND PRESENTS INFORMATION IN A WAY THAT IS EASY TO READ.**

- **IT PROVIDES AT A GLANCE INFORMATION TO WHAT IS ACTUALLY HAPPENING IN AN ORGANIZATION**

22.598
Number of Fans

👥

Gained: 703   Lost: 62
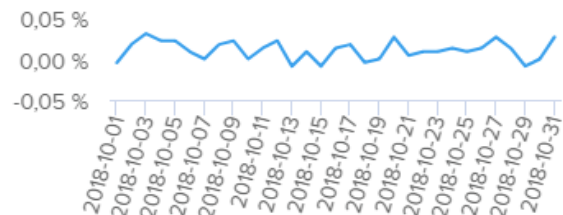
8.148
Page Views

👁

Unique Pageviews: 4,8K

199
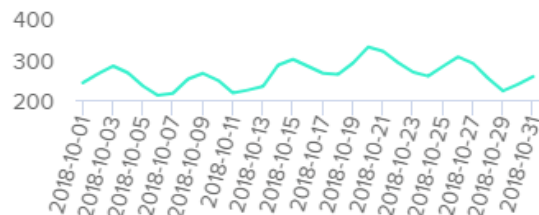Total Actions

🖱

To prev. period: +6,99%
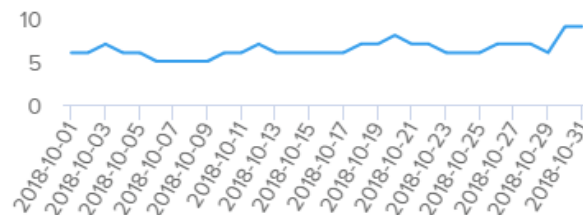
5.828
Post Likes

👍

New Pagelikes: 703

Audience Growth

Page Views

Total Actions

Top Countries of Fans Gained

1. United States of America	282
2. United Kingsdom	113
3. Brasil	72

Top Sources of Page Views

1. facebook	2,532
2. Instagram	2,235
3. mywebsite.com	647

Actions on Page

Website Clicks	107
Page Call To Action Clicks	40
Phone Number Clicks	31
Get Direction Clicks	21

Fans By Country

Fans By Age & Gender

👩 43% Women

🧑 57% Men

	13-17	18-24	25-34	35-44	45-54	55-64	65+
Women	0%	9%	43%	28%	14%	4%	2%
Men	0%	13%	45%	26%	10%	4%	2%

Twitter

⊕ Add a Klip   ▦ Layout
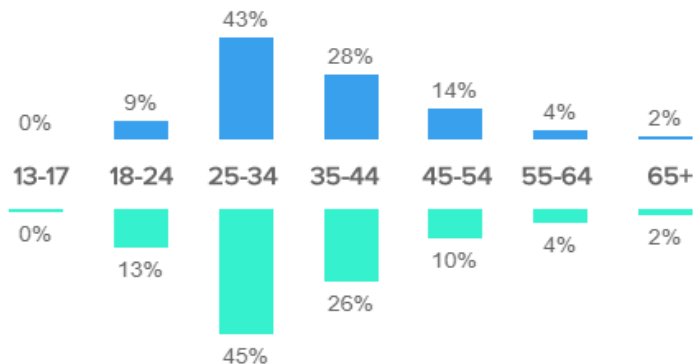
Twitter Followers vs. Target

15,760 Current Followers

Target of 25,000 this year

Social Media & Web KPIs

Twitter ▾

	Past 30 Days	Previous 30d	Delta	Change%
Visitors	1,851	1,277	▲	31%
Goals	15	9	▲	40%

→ Visitors p30d   ◆ Goals p30d

Key Metrics Past 30 Days

▲ **1,851 Referrals**

Compared to 1,277 last month

▼ **326 Retweets**

Compared to 349 last month

▼ **622 Favorites**

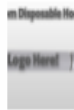Compared to 689 last month

▲ **15 Conversions**

Compared to 9 last month

Mentions

I've just extended my @Klipfolio #dashboard trial

Need... more... time... Thanks for extending my #dashboard trial @Klipfolio!

I don't always tweet, but when I do, it's to extend my @Klipfolio #dashboard trial

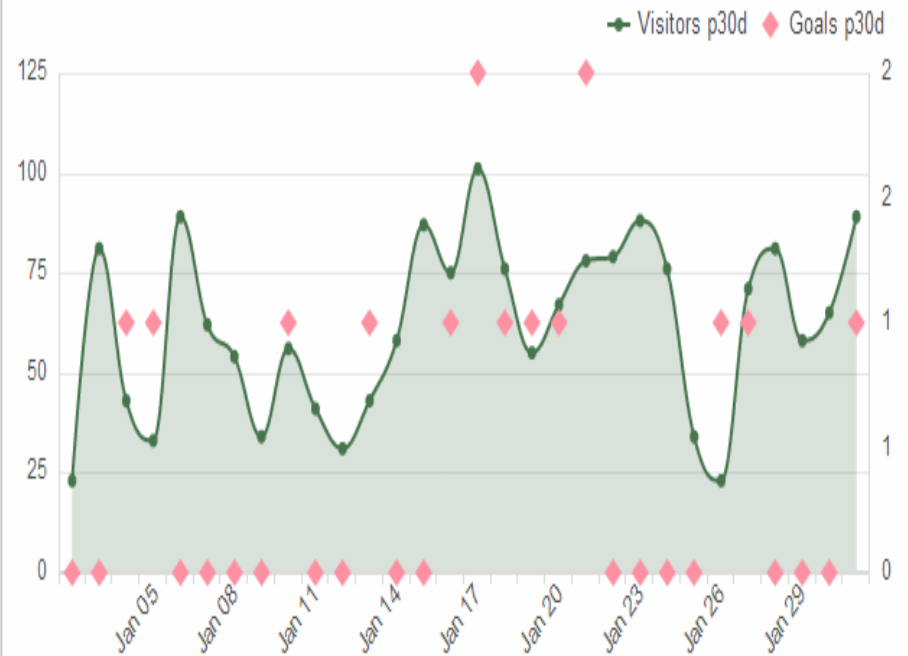Need... more... time... Thanks for extending my #dashboard trial @Klipfolio!

The Analytics Daily is out! http://t.co/YwgSMVDwmu Stories via @LEADPPC @samysha69

YouTube

1,761
YouTube Views
▲ 100%

YouTube Views (Country)
667 ▲ 24%

Likes vs Dislikes

- 150 Likes
- 30 Dislikes
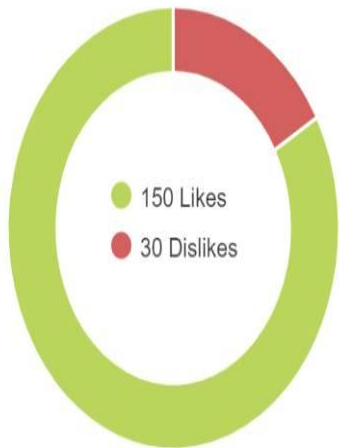
1,221
Total Subscribers
▲ 100%

27
YouTube Comments
▲ 42%

465
YouTube Estimated Min. Watched
▲ 11%

87
YouTube Videos Published
▲ 100%

YouTube Views by Traffic Source
272 ▲ 100%

125	
100	
75	
50	
25	

External YouTube channels Suggested videos YouTube search

Dashboard Summary of your App

Home / Library / Data

8,457
Daily Visits

52,160
Sales

15,823
Comments

36,752
No. of Visits

Area Chart

30,000

22,500

15,000

7,500

Line Chart

200

150

100

50
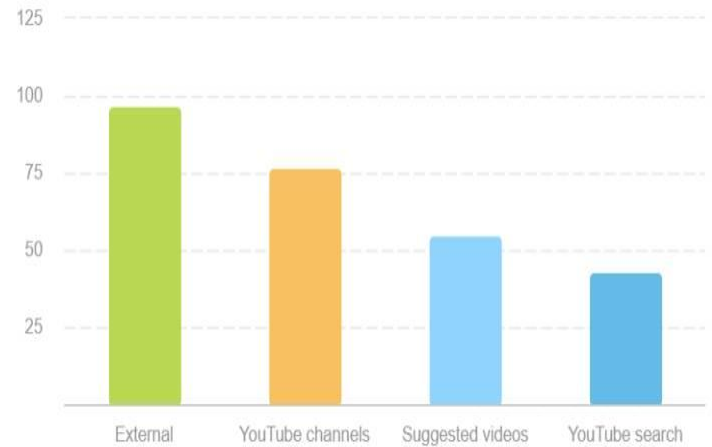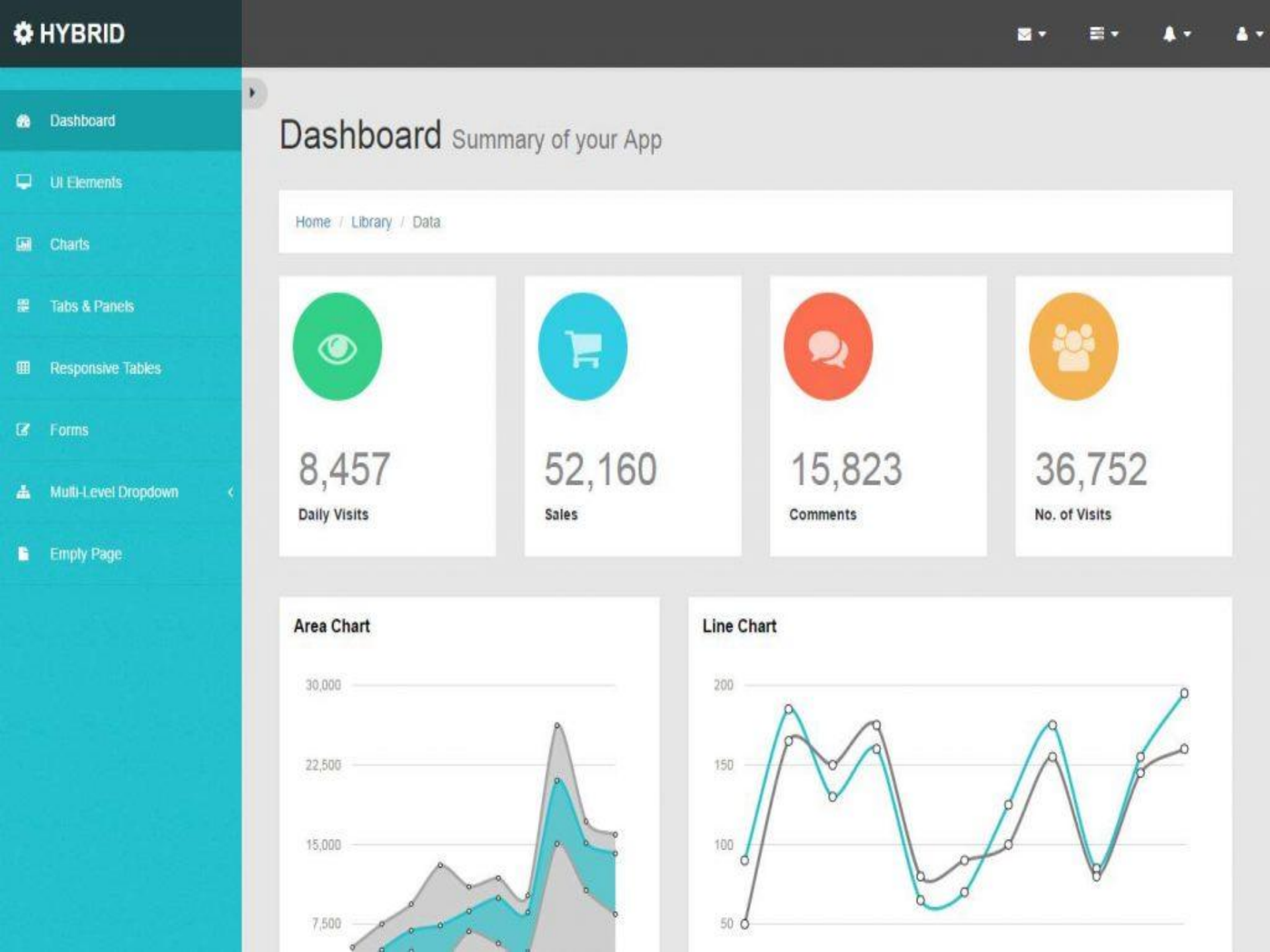
WHY ENTERPRISES NEED DASHBOARDS

- ENHANCED INFORMATION VISIBILITY

- BETTER FORECASTING

- KPI's

- REAL TIME CUSTOMER ANALYTICS

- BETTER DECISION MAKING

TYPES OF DASHBOARDS

- ENTERPRISE PERFORMANCE DASHBOARDS

- CUSTOMER SUPPORT DASHBOARDS

- DIVISIONAL DASHBOARDS

ENTERPRISE PERFORMANCE DASHBOARDS

- PROVIDE OVERALL VIEW OF THE ENTIRE ORGANIZATION SUCH AS

- SALES REVENUE

- KPI

- BALANCED SCORE CARD INFORMATION

ENTERPRISE PERFORMANCE DASHBOARDS

Lenght Of Stay

Length Of Stay In Days

3.5 days
Avg Length Of Stay

Admissions & 30-Day Readmission Rate

- Admissions
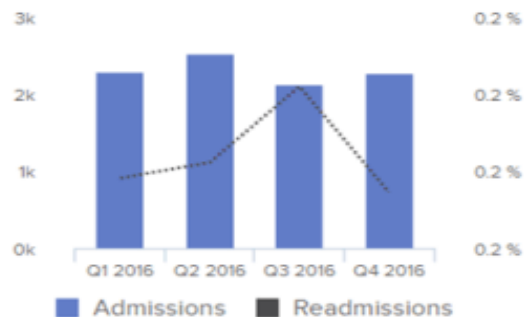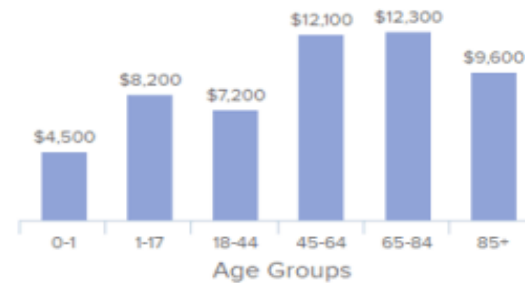- Readmissions

20.4%
Avg 30-Day Readmission Rate

Avg Treatment Costs

Age Groups

$ 9,700
Avg Treatment Costs All Ages

Stays By Payer

- Medicare — 39%
- Private Insurance — 31%
- Medicaid — 21%
- Uninsured — 6%
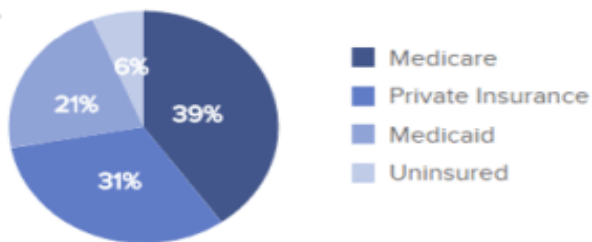
Avg Nurse Patient Ratio

* Trauma Units: 1 : 1
* Emergency Rooms: 1 : 3
* Surgical Rooms: 1 : 5
* Rehabilitation Units: 1 : 6
* Nursery Units: 1 : 8

Day Shift: 1 : 4   Night Shift: 1 : 8

Costs By Payer & Type Of Stays

Payer	Surgical Stays	Medical Stays	Maternal & Neonatal Stays
Medicare	45 %	55 %	
Medicaid	30 %	43 %	27 %
Private Insurance	52 %	34 %	13 %
Uninsured	42 %	54 %	6 %

- Surgical Stays
- Medical Stays
- Maternal & Neonatal Stays
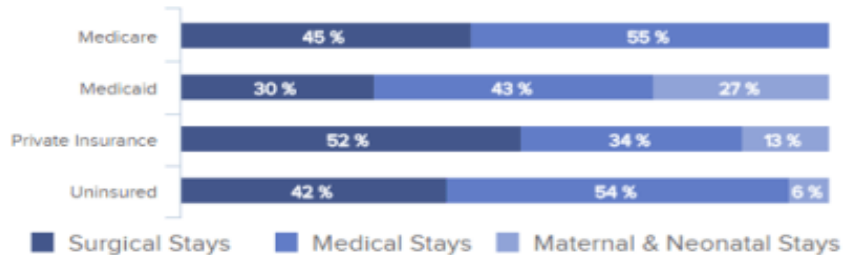
Hospital-Aqcuired Infections (Percent Of Cases)

	Q1 2016	Q2 2016	Q3 2016	Q4 2016
Central-Line Catheter Infections	0.3 %	0.5 %	0.4 %	0.6 %
Surgical Site Infections	1 %	0.8 %	1.1 %	0.9 %

- Surgical Site Infections
- Central-Line Catheter Infections

ENTERPRISE PERFORMANCE DASHBOARDS

Social Media Performance

Klipfolio

Social Media Followers

Facebook	Twitter	Instagram
26,472 Likes	**45,322** Followers	**6,524** Followers

YouTube Subscribers (Last 30 Days)

● Gained ● Lost

(Bar chart of Subscriptions from Aug 22 to Sep 19)
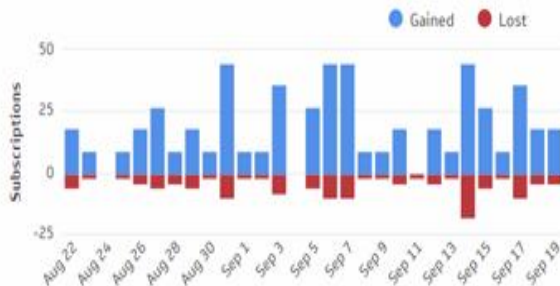
LinkedIn Key Metrics (Last 30 Days)

Metric	Last 30 Days		Prev 30 Days	30 Day Trend
Clicks	1,197		1,273	
Likes	602		510	
Shares	77		105	
Followers	11,802		11,438	
New Followers	364		306	
Impressions	163,786		114,130	

Facebook Engaged Users and Page Impressions (Final)

Aug 21, 2016 to Aug 27, 2016
Aug 14, 2016 to Aug 20, 2016 (prev.)

7 Days ▾

Facebook Page:Itsy Bitsy

Engaged Users
19,878
▲ 19%
vs. 16,641 (prev.)

Page Impressions
8,391,834
▲ 9%
vs. 7,688,733 (prev.)

This Klip does not show your data for today and yesterday, because the Facebook API does not provide it.

Facebook Page Likes

Aug 21, 2016 to Aug 27, 2016
Aug 14, 2016 to Aug 20, 2016 (prev.)

7 Days ▾

Facebook Page: Itsy Bitsy

Total Page Likes
8,132
▼ -31%
vs. 11,793 (prev.)

New Page Likes
432
▲ 35%
vs. 321 (prev.)

This Klip does not show your data for today and yesterday, because the Facebook API does not provide it.

Twitter Favorites of Last 10 Tweets (@))

26 ▲7
Favorites   vs 19 (prev.)

Twitter Retweets of Last 10 Tweets (@))

418 ▲141
Retweets   vs 277 (prev.)

Instagram Overview

192
Posts

289
Followers

109
Following

CUSTOMER SUPPORT DASHBOARDS

- PROVIDES CUSTOMERS THEIR PERSONAL ACCOUNT INFORMATION

CUSTOMER SUPPORT DASHBOARDS

81%
Requests Answered 2017

1,02M
Total Requests 2017

Request Volume Vs Service Level

Requests

46k
42k
38k

Of Requests Answered

100 %
80 %
60 %

Jan 2017, Feb 2017, Mar 2017, Apr 2017, May 2017, Jun 2017, Jul 2017, Aug 2017, Sep 2017, Oct 2017, Nov 2017, Dec 2017

■ Requests   ● Answered_Calls

Customer Retention

Target >= 90%

92%
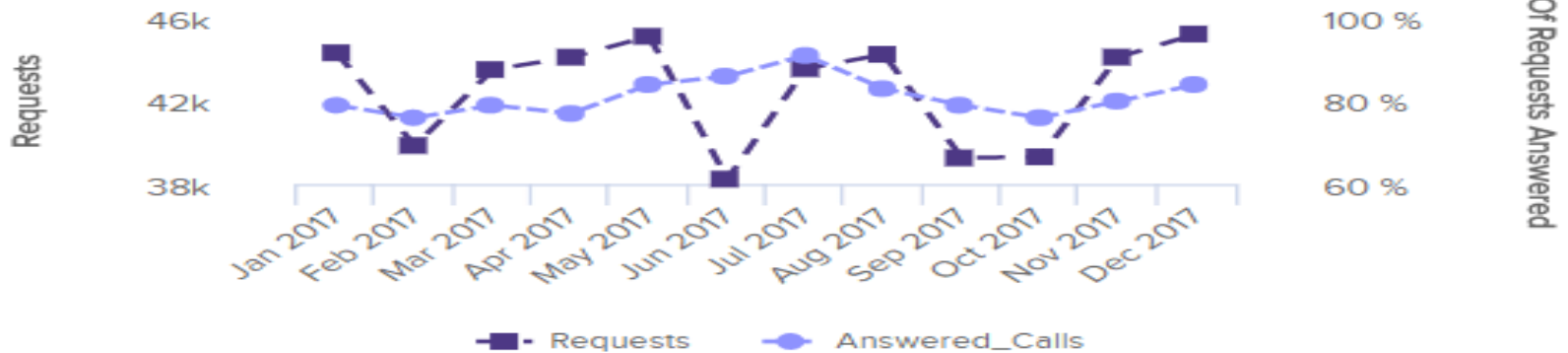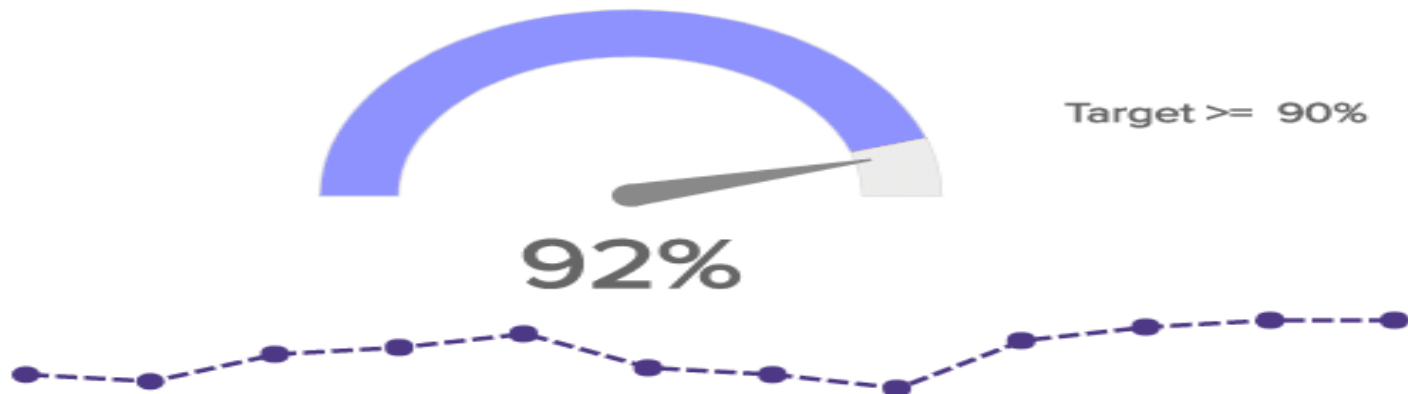
DIVISIONAL DASHBOARDS

- PROVIDES QUICK INFORMATION TO DIVISIONAL HEADS, MANAGERS, DEPARTMENT HEADS

- SALES DASHBOARD

- FINANCE DASHBOARD

- HUMAN RESOURCE DASHBOARD

HOW TO CREATE DASHBOARD - 1

- **FIRST STEP** : **UNDERSTAND/IDENTIFY THE DATA THAT WILL GO INTO AN ENTERPRISE DASHBOARD.**
- IT CAN CONTAIN QUANTITATIVE/NON QUANTITATIVE DATA
- QUANTITATIVE DATA SUCH AS (EDUCATION DASHBOARD)
  - NO. OF STUDENT BATCHES
  - NO. OF LEARNING PROGRAMS
  - NO. OF STUDENTS QUALIFIED
  - NO. OF STUDENTS BEING TRAINED
- NON QUANTITATIVE DATA SUCH AS
  - FEATURES OF LEARNING PROGRAMS
  - USERS COMMENTS ON EFFECTIVENESS OF LEARNING PROGRAMS

HOW TO CREATE DASHBOARD - 2

- **SECOND STEP** : **DECIDE ON THE TIME FRAMES**
- THE VARIOUS TIME FRAMES COULD BE

- THIS MONTH TO DATE
- THIS QUARTER TO DATE
- THIS YEAR TO DATE
- TODAY SO FAR

HOW TO CREATE DASHBOARD - 3

- **THIRD STEP** : **DECIDE ON THE COMPARATIVE MEASURES.**

- THE SAME MEASURE AT THE SAME POINT IN TIME IN THE PAST

- THE SAME MEASURE AT SOME OTHER POINT IN TIME IN THE PAST

- A COMPETITOR'S MEASURE

HOW TO CREATE DASHBOARD - 4

- **LAST STEP**: **DECIDE ON THE EVALUATION MECHANISMS**

- USING VISUAL OBJECTS (TRAFFIC LIGHTS)
- USING VISUAL ATTRIBUTES (RED COLOR FOR THE MEASURE TO ALERT A SERIOUS CONDITION)

TIPS FOR CREATING DASHBOARD

- **DON'T MAKE YOUR DASHBOARD A DATA REPOSITORY (AVOID UNWANTED DATE)**

- **AVOID FANCY FORMATTING**

- **LIMIT EACH DASHBOARD TO ONE PRINTABLE PAGE**

Total Runs

165,858

Total Wickets Taken

6,013

Individual High Score

175

Max Wickets taken
in a Season

32

Number of Countries

12

Number of Overseas
Players

213

Number of Indian
Players

257

Number of Venues

22

Click on the team logos to see the respective team details

China

Pakistan

India

Previous Year IPL

Year 2017 Opinion Poll

The Indian Premier League (IPL) is a professional Twenty20 cricket leagu...

Year

1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013

Vs. Country

Australia   Bangladesh   England   New Zealand   Pakistan   South Africa   Sri Lanka   West Indies   Zimbabwe

Current Selections

Matches	Runs	200s	100s	50s	Average
200	15921	6	51	68	53.79

Sachin Ramesh Tendulkar
Date of Birth: April 24, 1973
Batting: Right handed

Sachin! Sachin! Sachin

Runs Scored Year on Year

Values: 215, 373, 78, 419, 640, 700, 58, 628, 1000, 647, 1088, 575, 1003, 1392, 153, 915, 444, 267, 776, 541, 1063, 1562, 756, 357, 276

Years: 1989–2013

Runs scored Vs. Country

Country	Runs
PAK	1057
NZL	1595
ENG	2535
SRL	1995
AUS	3630
ZIM	918
SAF	1741
WID	1630
BAN	820
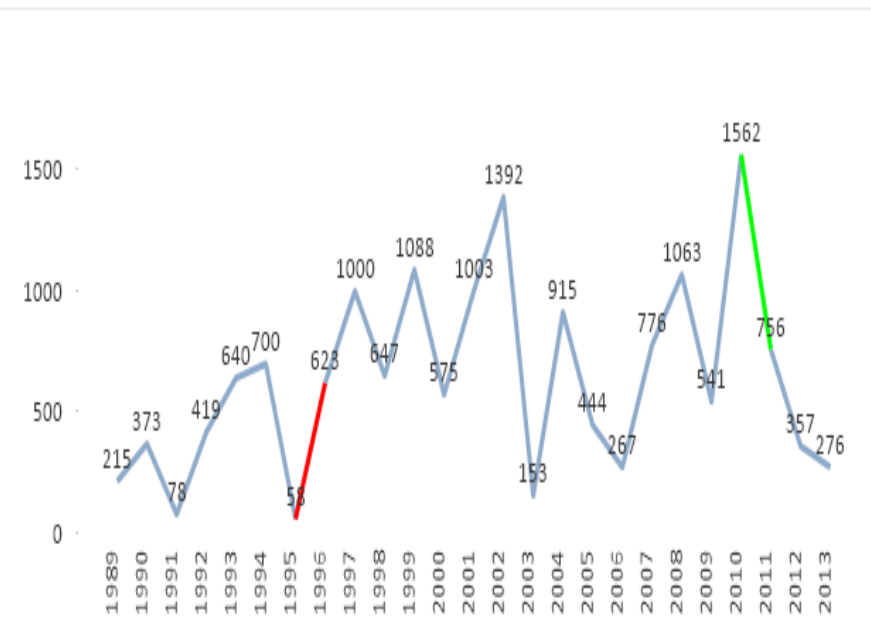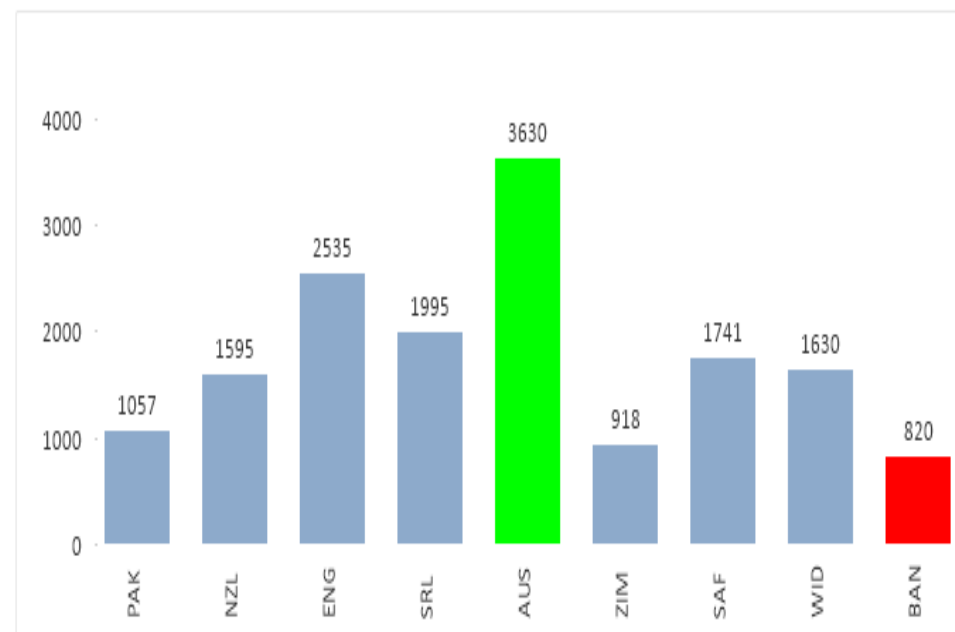
KPIs

| Gender ⌄ | Ethnicity ⌄ | Domicile ⌄ |

Applications
16,052
14,055 ▲

Admission Rate
14.8%
18.8% ▼

Top Majors
Engineering
Business Humanities

Total Enrollment
9,555
8,357 ▲

Annual Retention Rate
80.9%
86.0% ▼

Application Trends

Major Name ▼

2009
- Liberal Arts 50%
- Finance 14%
- Human Reso.. 13%
- Business Ma.. 12%
- Womens Stu.. 11%

2010
- Liberal Arts 49%
- Finance 14%
- Business Ma.. 13%
- Human Reso.. 13%
- Womens Stu.. 11%

2011
- Liberal Arts 49%
- Finance 15%
- Business Ma.. 13%
- Human Reso.. 12%
- Social Scienc.. 11%

2012
- Liberal Arts 49%
- Finance 14%
- Business Ma.. 13%
- Human Reso.. 12%
- Foreign Lang.. 11%

2013
- Liberal Arts 29%
- Human Reso.. 25%
- Finance 19%
- History 15%
- Business Ma.. 13%

2014
- Human Reso.. 30%
- Business Ma.. 21%
- Finance 19%
- Computer Sc.. 17%
- Music 13%

2015
- Computer Sc.. 30%
- Human Reso.. 23%
- Electrical Eng.. 23%
- Finance 15%
- Bio-Tech Eng.. 8%

Caucasian/Minority
| 53.0% | 47.0% |
| 5295.8 | 4704.2 |

Male/Female
| 63.0% | 37.0% |
| 6303.5 | 3696.5 |

Freshman/Transfer
| 82.7% | 17.3% |
| 8273.6 | 1726.4 |

Domestic/International
| 67.2% | 32.8% |
| 6716.9 | 3283.1 |

SERPENT
CONSULTING SERVICES

3 Applicants	5 Students	3 Teachers	3 Classes	90 Total Seats 82 Available Seats
More info ⊙	More info ⊙	More info ⊙	More info ⊙	

1 Regular Exams

5 Students Passed

0 Students Failed

3 Additional Exams

3 Students Passed

1 Students Failed

- **Due to lack of time, I have not covered complete detailed topics of 5th unit. This presentation has only points. Please read book for detailed information.**

- # THANK YOU