"Analytical Subjects in Management Undergraduate Programmes in Sri Lanka: *Curriculum, Purpose and Practices*"

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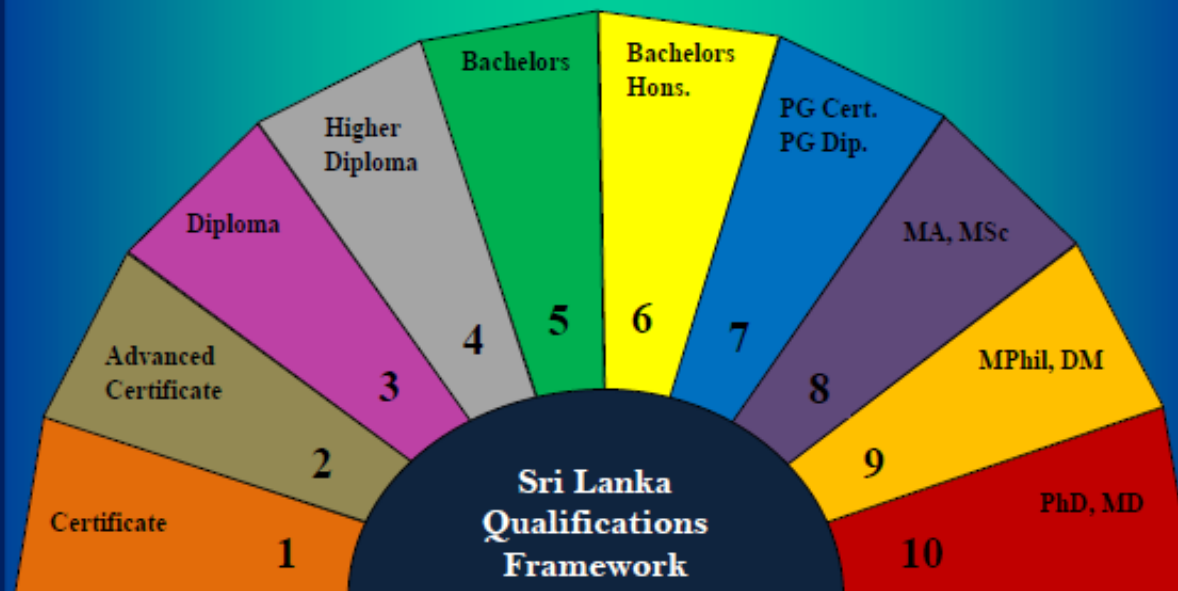**Faculty of Management Studies and Commerce**
University of Sri Jayewardenepura
Sri Lanka

Education System in Sri Lanka

- Provide free education for all children of primary and secondary level.

- Students who score highest marks in G.C.E. A/L get the opportunity for tertiary education at one of the state Universities which are also providing education free of charge.

- There is a huge demand for the Management Education.

- No placements can be found for all qualified students for tertiary education.

- Private Universities provide considerable level of service to meet this demand.

- Chances to enter for the course / Institution they prefer are limited.

- Fixed type streams in State Universities.

SRI LANKA
QUALIFICATIONS FRAMEWORK

Bachelors

Bachelors Hons.

Higher Diploma

PG Cert. PG Dip.

Diploma

MA, MSc

Advanced Certificate

MPhil, DM

Certificate

PhD, MD

Sri Lanka Qualifications Framework

1 2 3 4 5 6 7 8 9 10

Ministry of Higher Education

SLQL=Sri Lanka Qualifications Framework Level
NVQL=National Vocational Qualification Level

SLQL 10	Doctoral Degree, MD with Board Certification	
SLQL 9	Master of Philosophy, Masters by fulltime research, DM	
SLQL 8	Masters with Coursework and a Research component	
SLQL 7	Postgraduate Certificate, Diploma, Masters with Coursework	
SLQL 6	Honours Bachelors	
SLQL 5	Bachelors Degree, Bachelors Double Major Degree	NVQL 7
SLQL 4	Higher Diploma	NVQL 6
SLQL 3	Diploma	NVQL 5
SLQL 2	Advanced Certificate	NVQL 4
SLQL 1	Certificate	NVQL 3
		NVQL 2

Quality of Higher Education

Why we need to ensure the Quality?

- Educated workforce would lead to the greater economic success of a country.

- Universities as Higher Education Institutions (HEIs) are the main institutions which prepare the professionals who will work as decision making authorities, managers in private sector companies, and manage public and private resources, and care for the health and education of the next generation (Oliveira & Ferreira, 2009).

- Society of any country primarily expects from its graduates to contribute to the nation's economy and the development of the country (Yorke, 2005).

Quality of Higher Education – Sri Lanka

- Concern of the faculty members.

- Sri Lanka Quality Assurance Accreditation Council (SLQAAC)* has guidelines to assure the quality of higher education.

- These guidelines are very closely align with the evaluation criteria of

  - ISO9000   - MBNQA

  - EFQM   - AACSB

- But each faculty has freedom to decide and introduce their curriculum as required by them.

*http://www.eugc.ac.lk/qaa/

Outcomes of Higher Education

- Gibbs (2000) has argued that 'employability' is one of the outcomes of higher education but not the primary aim of higher education. Gibbs suggested giving more weight to the other outcomes of higher education which are identified as **personal and civic development of individuals.**

- The contents of the undergraduate programme should have a balance between subject specified knowledge and transferable skills (Green, 1994)

- HEIs help the undergraduates to develop their competencies through curricular, extracurricular, and career orientation activities (Astin, 1999; Kuh, 2008; National Survey of Student Engagement NSSE, 2000).

Issues Faced

- The employers' continuous complains regarding the poor level of work-readiness of new graduates is a common issue all over the world (Allen & Velden, 2001; Archer & Davison, 2008; Ariyawansa, 2008; Farooq, 2011; Gil-Galván, 2011; Hesketh, 2000; Mamun, 2012; Vilka & Pelse, 2012).

- The graduates too realize their shortage of skills and knowledge when compared to the market needs (HETC, 2012; Vilka & Pelse, 2012).

According to Green (1994), the quality of curriculum and academic service of Higher Education can be measured through the indicators of: *how fit the graduates are for human resource needs of the labour market, and how successful the expansion of borders of knowledge occurs through research.*

How the Management graduates "Fitting For the Purpose" of their employer

- Subject Specific Knowledge
- **Analytical Ability**
- Attitudes
- Other Necessary Skills

General Objectives of Undergraduate level

The subject deals with three main aspects;

- the study of organizations, their management and the changing external environment in which they operate,

- preparation for and development of a career in management

- enhancement of lifelong learning skills and personal development to contribute to society at large.

(Subject Benchmark Statement in Management, Quality Assurance and Accreditation Council, University Grants Commission, Sri Lanka, 2010)

Importance of Analytical ability

- Management & Commerce being a Social Science links closely with a number of other disciplines, such as, with Behavioral and quantitative.

- The Behavioral and Quantitative subjects assist managers observing human behavior and quantifying and analyzing managerial performance in functional areas of management.

(Subject Benchmark Statement in Management, Quality Assurance and Accreditation Council, University Grants Commission, Sri Lanka, 2010)

Structure of the Curriculum

Basically based on four broad subject areas: namely as follows;

a)   Management based subjects

Principles of Management , Human Resources Management

Marketing Management , Operations Management   etc.

b)   Management support based subjects

Economics,   Accountancy & Finance

c)   Quantitative based subjects

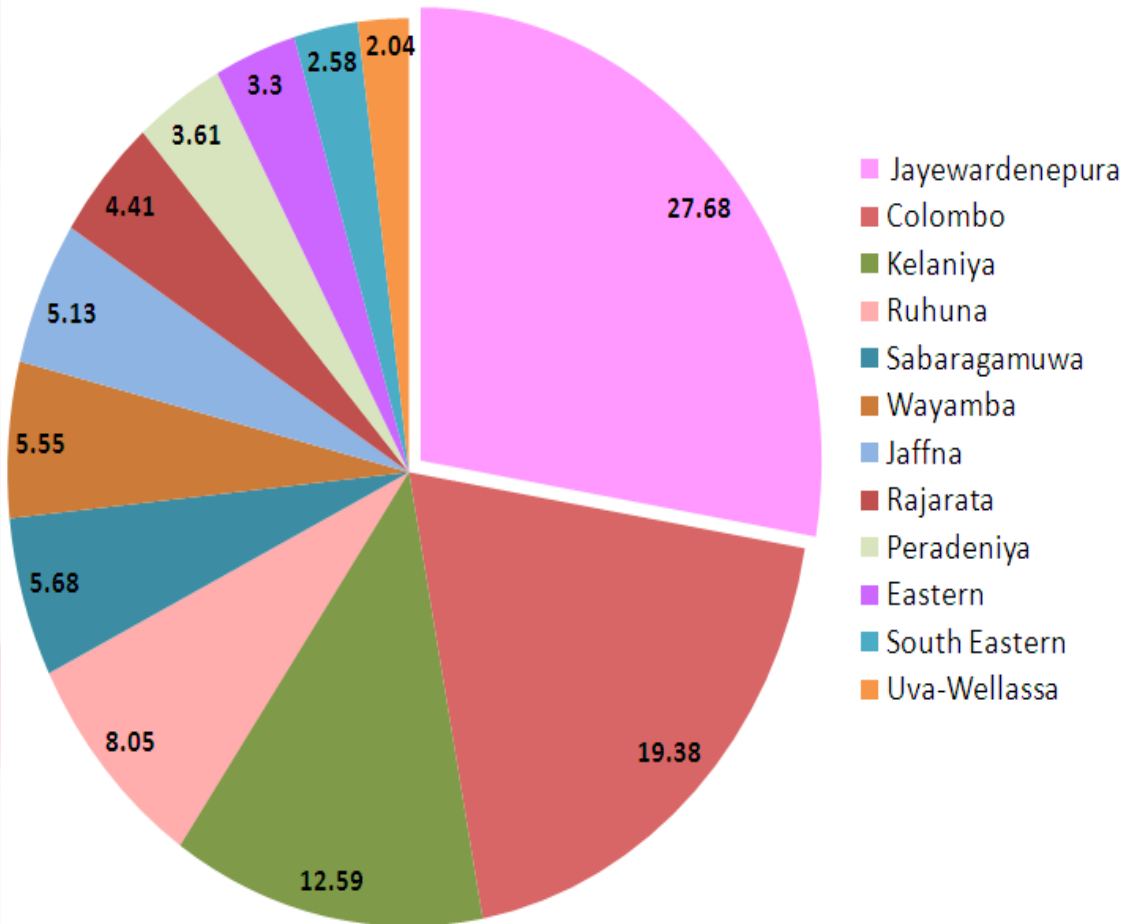**Mathematics,   Statistics, and Operations Research**

d)   Human Behavioral based subjects

Organizational Behavior

Industrial/Organizational Psychology etc.

Scope of Employment of Graduates

The main employment is available for the graduates as managers in Private and Public sectors locally and overseas and as entrepreneurs, service providers, knowledge providers and knowledge seekers etc.

Management Education In Sri Lanka

Legend:
- Jayewardenepura
- Colombo
- Kelaniya
- Ruhuna
- Sabaragamuwa
- Wayamba
- Jaffna
- Rajarata
- Peradeniya
- Eastern
- South Eastern
- Uva-Wellassa

Values: 27.68, 19.38, 12.59, 8.05, 5.68, 5.55, 5.13, 4.41, 3.61, 3.3, 2.58, 2.04

- Diploma
- Advanced Diploma
- Undergraduate
- Postgraduate Dip.
- Masters (MBA, MSc)
- Ph.D.

- Training Prog. Certificate Prog.

Analytical Courses and level of Delivery

– PhD (under the Research Methodology course)

– Master level (MSc, MBA, MPM) - as a separate course or under the Research Methodology course

– Undergraduate level – Separate courses for

- Business Mathematics
- Business Statistics /Quantitative Techniques
- Statistical Data Analysis / Empirical Data Analysis
- Operations Research / Operations Management
- Econometrics
- Financial / Accounting Model building
- Quality Control

– Diploma level – Separate courses for

- Business Mathematics
- Business Statistics /Quantitative Techniques

Place for Analytical courses in the Curriculum
- Undergraduate level

Programme Types

  – BSc / BBA / BCom

BSc / BBA/ Bcom Courses have 24-30 Credits out of 120 credits for analytical courses and it is nearly **20% - 25%** of the total credits.

Courses - Undergraduate level

Basic level

    Business Mathematics

    Business Statistics / Quantitative Techniques

    Empirical Data Analysis (Computer Based)

Higher level

    Operations Research

    Econometrics

    Financial Modeling / Accounting Modeling

    Quality Control

    Empirical Data Analysis (Computer Based)

Objectives – Undergraduate level

Basic level courses

- Basically facilitate to understand the theories and applications of the other Co-courses of their specialization.
- Helping for the Final year Research / Project component

Higher level courses

- Provide an awareness of the labour market applications of their study field
- Helping for the Final year Research / Project component
- Analytical observations of managerial issues

Delivery Methods – Undergraduate level

Basic level courses

- Class room teaching / Practical training (in the lab)
- Group / individual assignments
- Use LMS

Higher level courses

- Class room teaching / Practical training (in the lab)
- Group / individual assignments
- Training at real work place (Internship Training)
- Site visits
- Guest lectures/ Discussions with experts in the field
- Use LMS

Academic Purposes

- Fair level of catching and applying the Mathematics for the other courses

- Application of Modeling is in very satisfactory level at their Research / Project. There are number of new developments of models at their training places.

- Work related training (Internship) helps the students to apply their theoretical knowledge to practice and finally for the project report.

- Statistical applications in Research / Project component is not in a satisfactory level. Research interest is also not in a satisfactory level.

Application of the Knowledge

Findings of a Survey
with
recent Graduates

Composition of the sample

Nearly 87% of young graduates are in the private sector and more than 5% are working as Trainees (probably in Private sector)
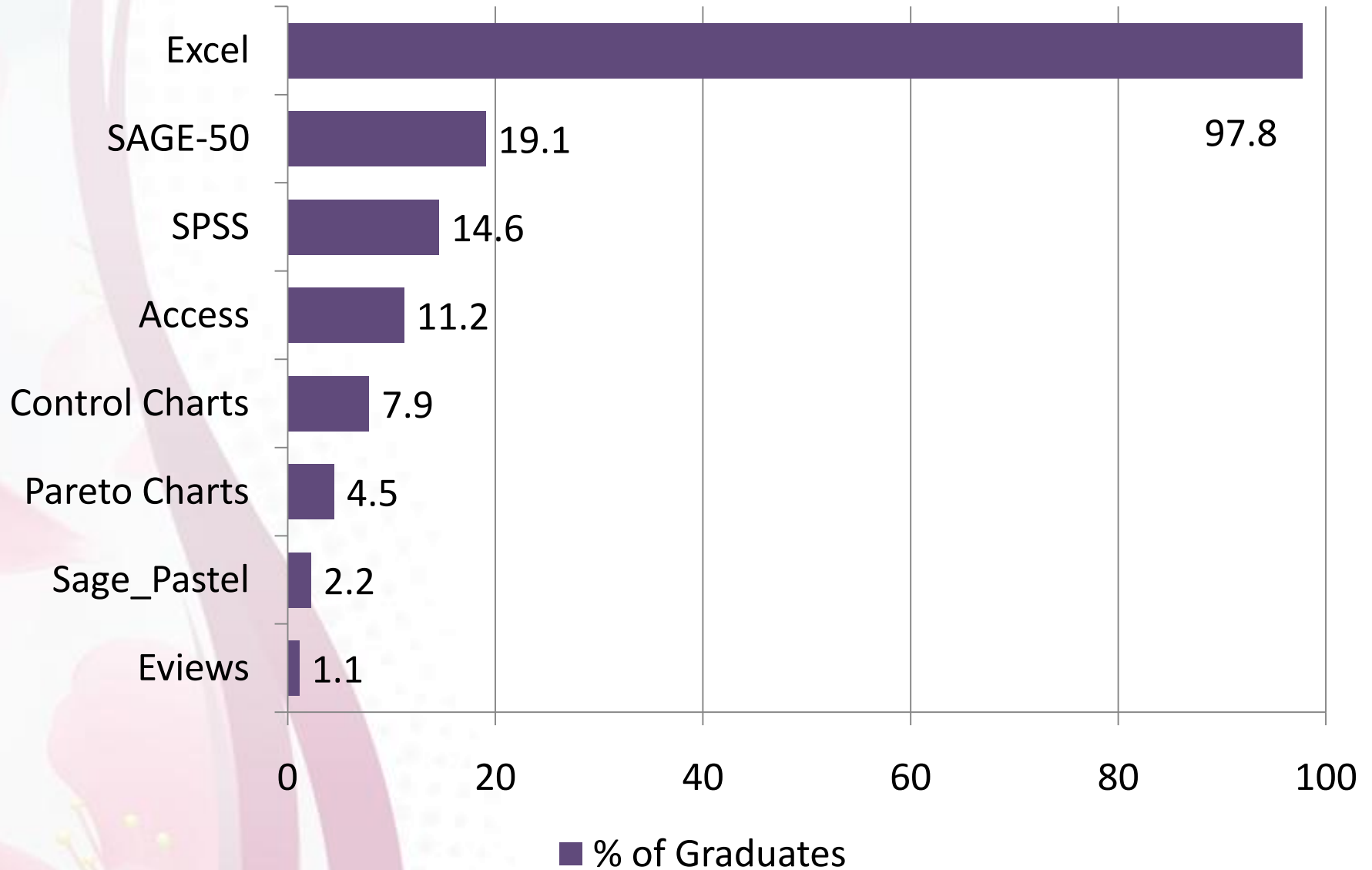
Nearly 12% are working as Senior Executives,
       32% are working as Junior Executives   and
       15% are working in non-Executive positions

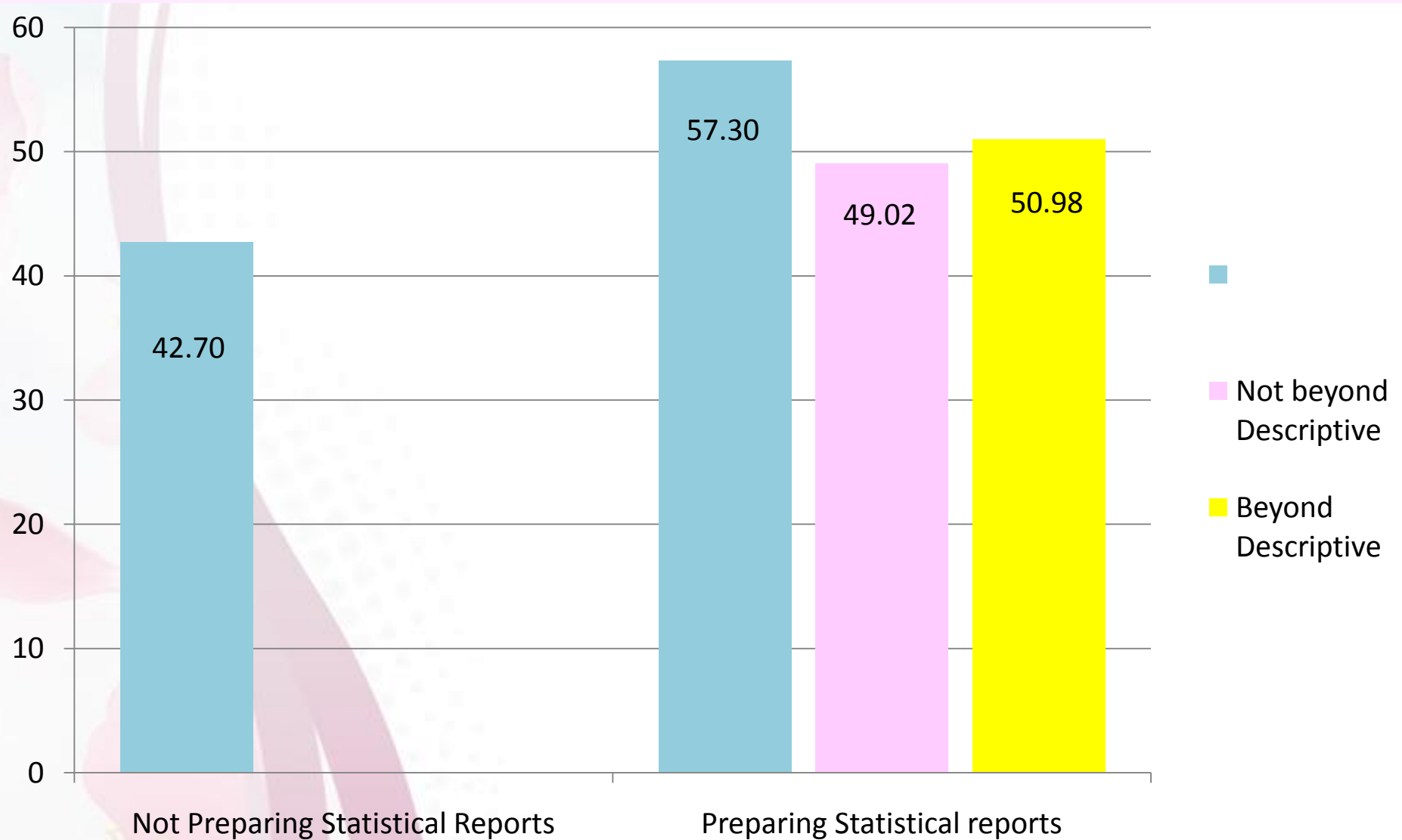Nearly 85% of new graduates are handling data at their work place

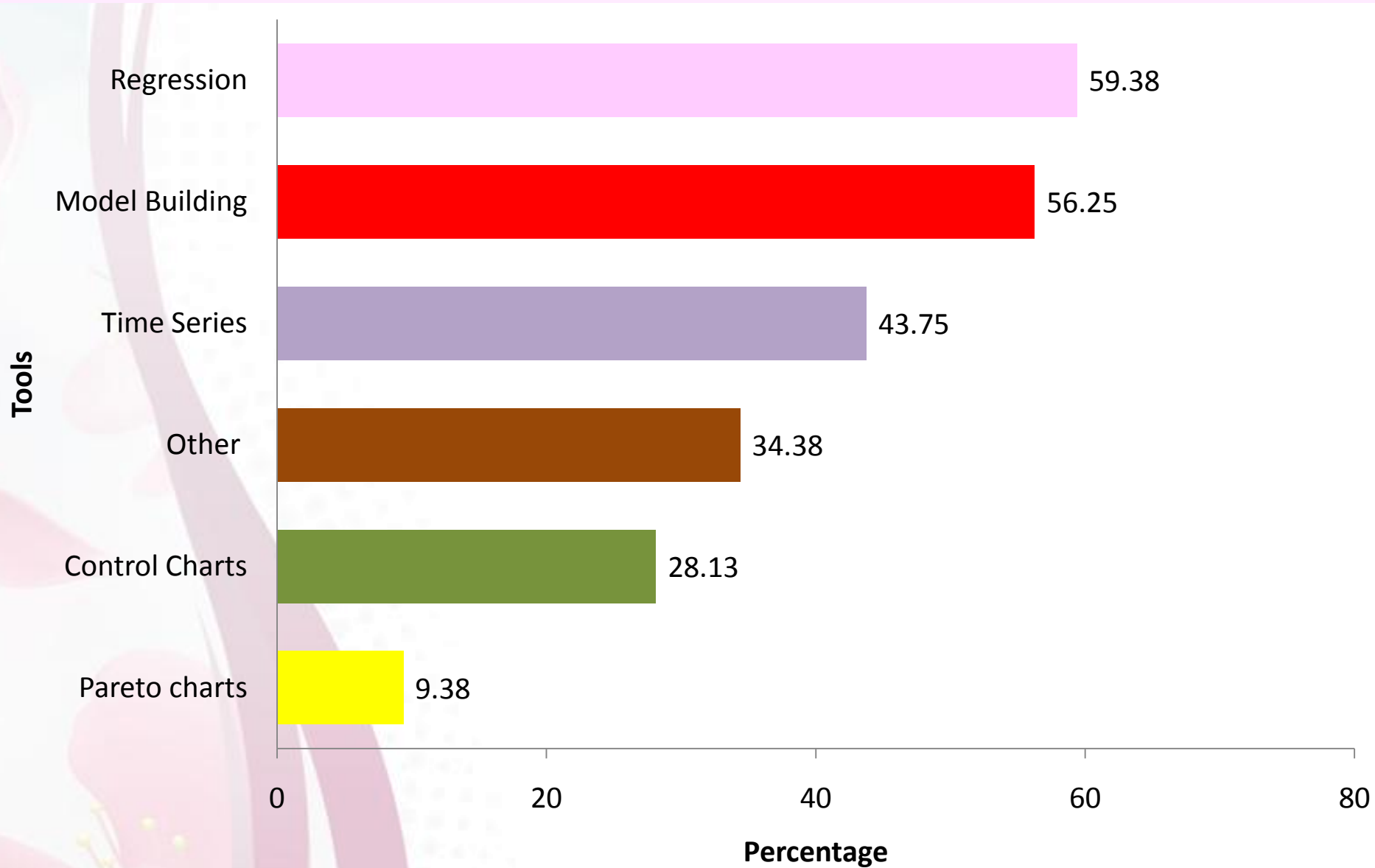# Type of data Handlling at work place (%)
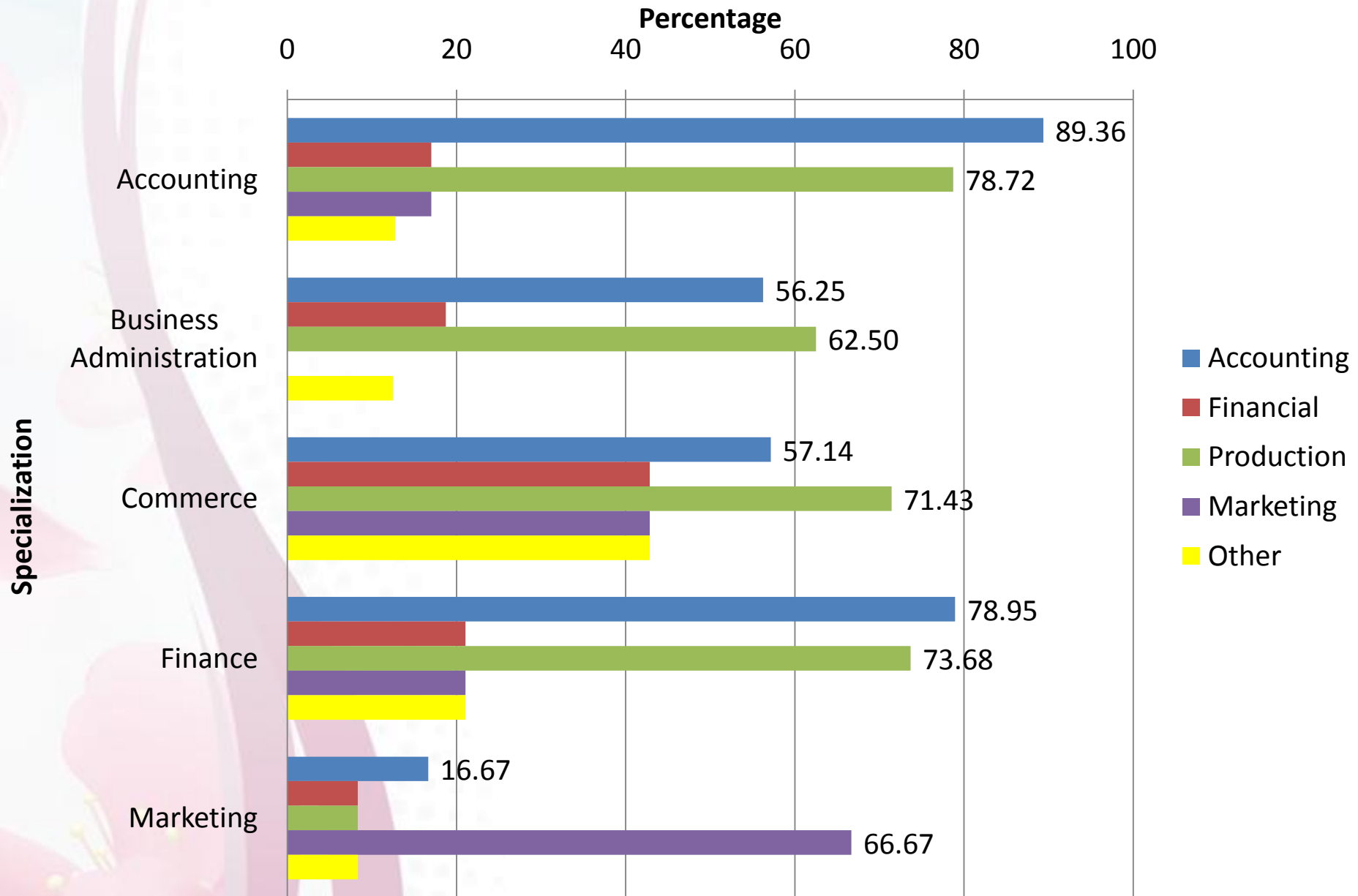
Type of Application used(%)

Application	% of Graduates
Excel	97.8
SAGE-50	19.1
SPSS	14.6
Access	11.2
Control Charts	7.9
Pareto Charts	4.5
Sage_Pastel	2.2
Eviews	1.1

■ % of Graduates

Preparation of Reports with Statistical Analysis

Tools used for Statistical Analysis

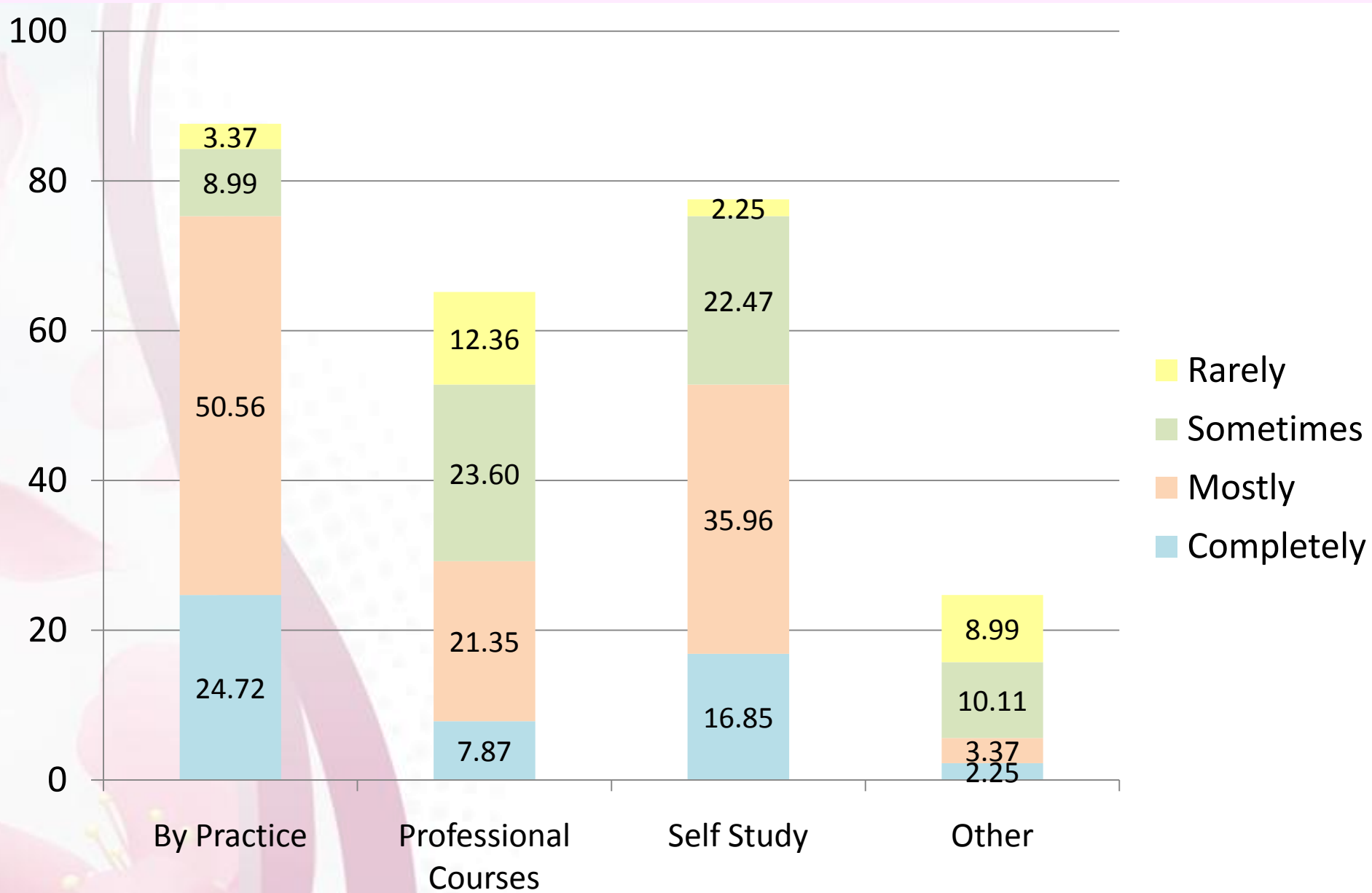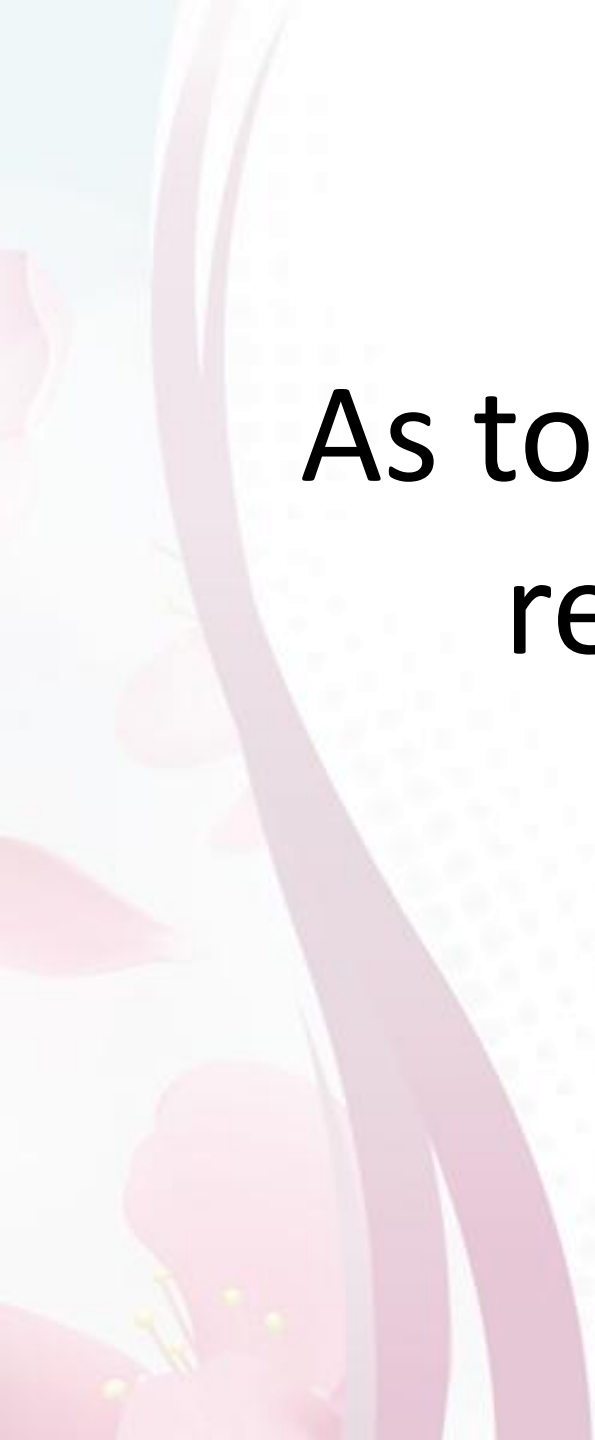| Tools	Percentage
Regression	59.38
Model Building	56.25
Time Series	43.75
Other	34.38
Control Charts	28.13
Pareto charts	9.38

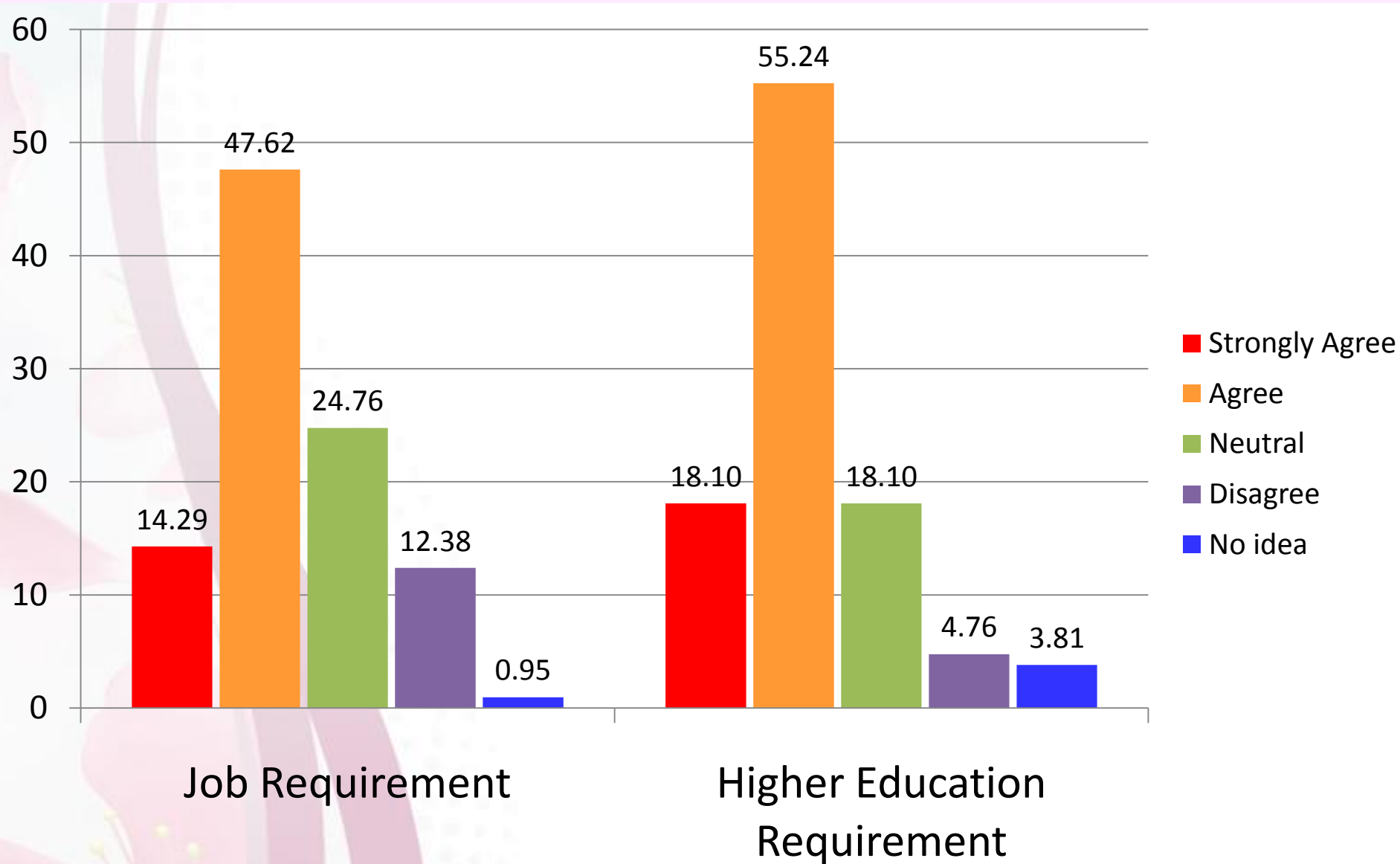# Awareness about the New Tools in the labour market
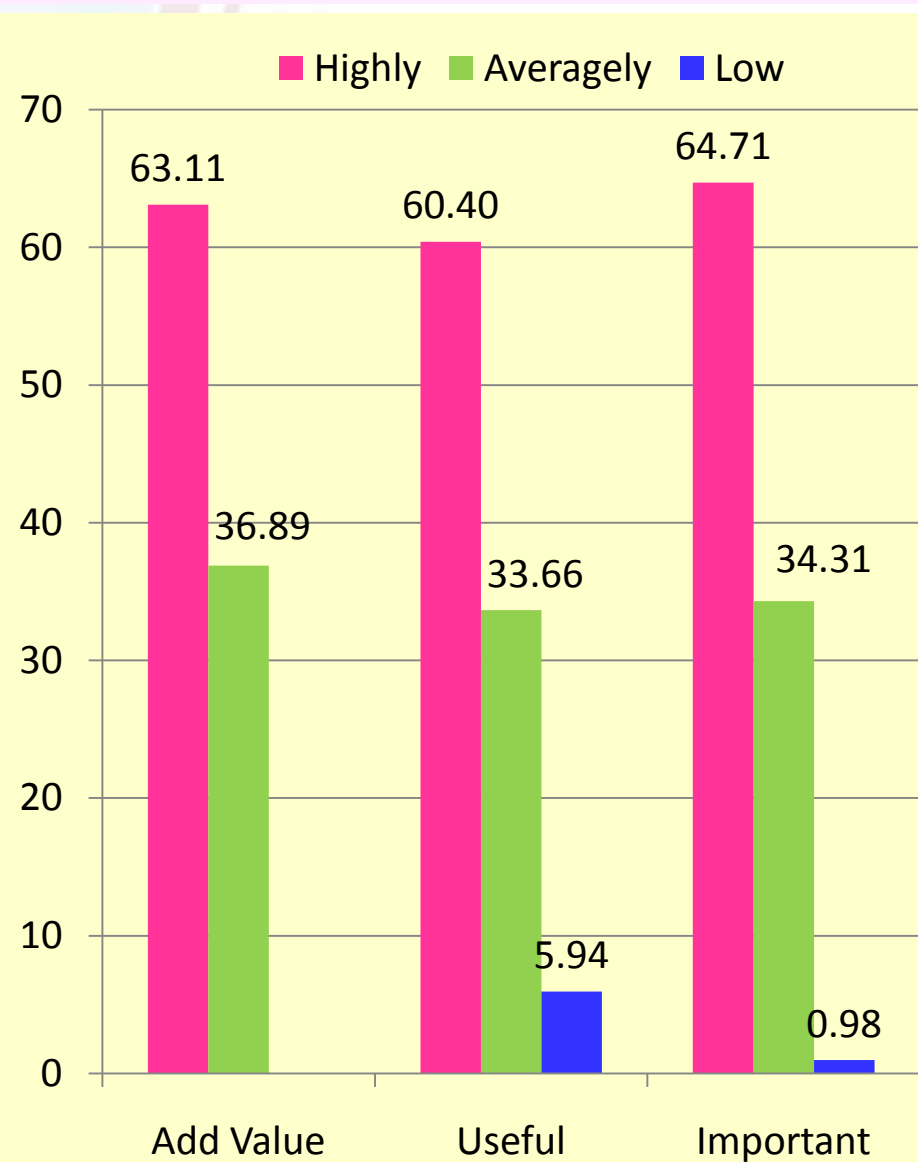
New Tools
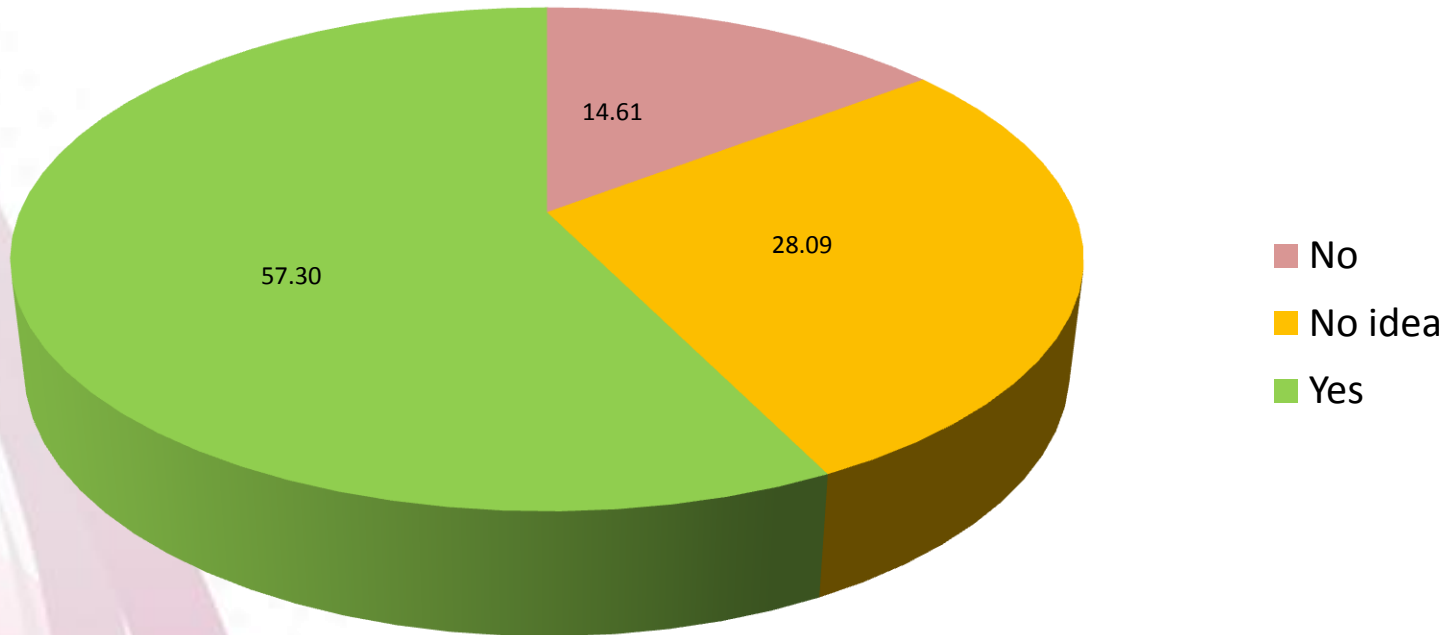
Other ways of learning

As to the evaluation of recent graduates

Sufficiency of the analytical ability gained through the Undergraduate Curriculum (%)

How Management Graduates Think about Mathematics

Mathematics

- Highly
- Averagely
- Low

	Add Value	Useful	Important
Highly	63.11	60.40	64.71
Averagely	36.89	33.66	34.31
Low		5.94	0.98

Statistics

- Highly
- Averagely
- Low

	Add Value	Useful	Important
Highly	67.65	62.38	65.00
Averagely	31.37	33.66	34.00
Low	0.98	3.96	1

Suggestions from Students ….

- Increase the credits for analytical courses which are the most important part of knowledge applicable at their work place.

- Computer related statistical analytical knowledge of students should be improved. Especially for Business Analysis jobs, Statistics is Essential.

- Concentrate more on financial mathematical model developing.

- More Sophisticated and Comprehensive modules focusing on practical usage of the Mathematics and Statistics .

Suggestions from Students ….

- More advance IT skills have to be developed. More focus needs to be given on advance Excel functions

- Do changes of the Curriculum of Mathematics and Statistics to fitting better with the requirements of labour market.

- Should include these subjects as courses in Second, Third and Final year curriculum.

- Pay more attention on the Research component which helps them to understand an existing problem from different angels

As to the evaluation of Academic staff

As to the Academic staff

Sufficiency of the Mathematics curriculum

- Yes
- No

40%

60%
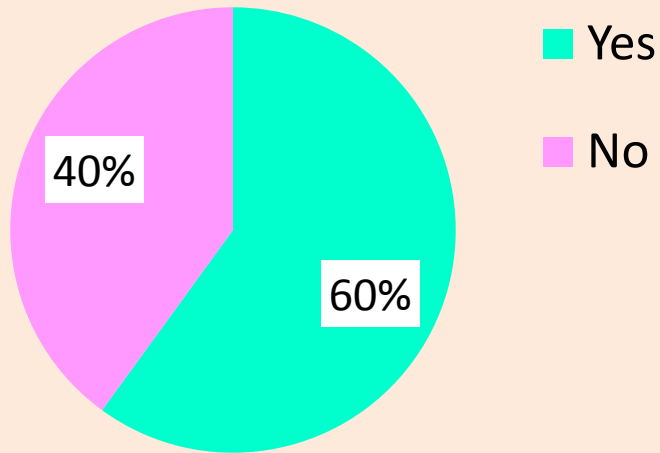
Sufficiency of the Statistics curriculum
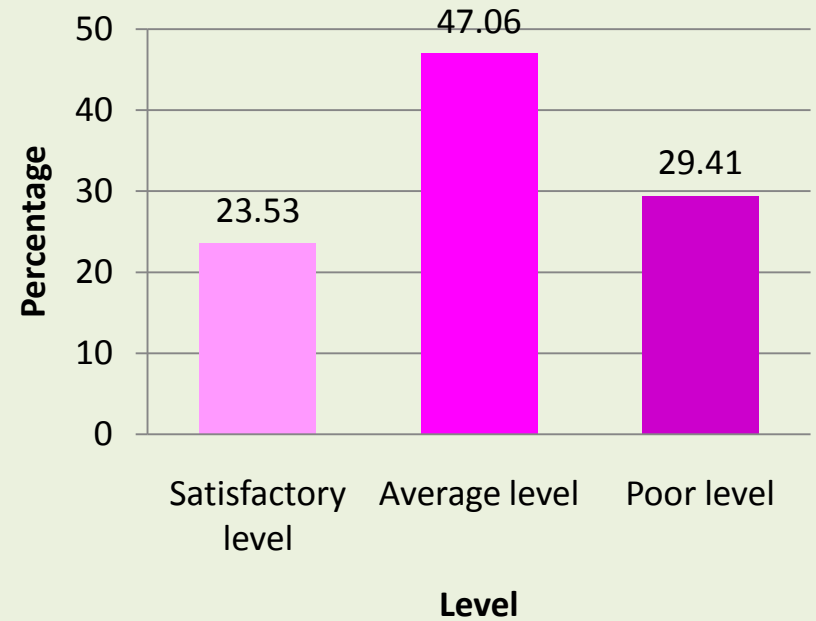
- Yes
- No

47%

53%
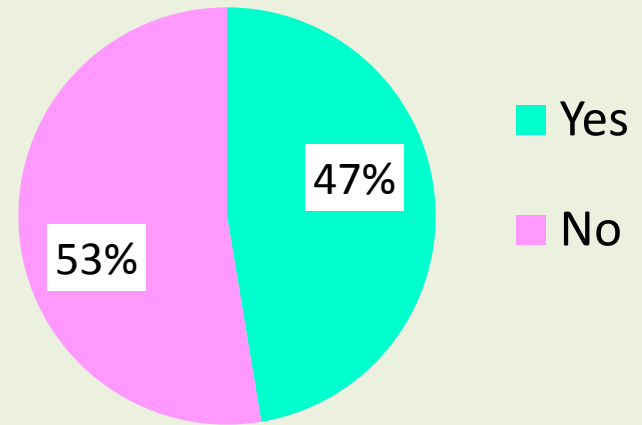
But, not necessary to increase the number of courses or credits.

As to the Academic staff
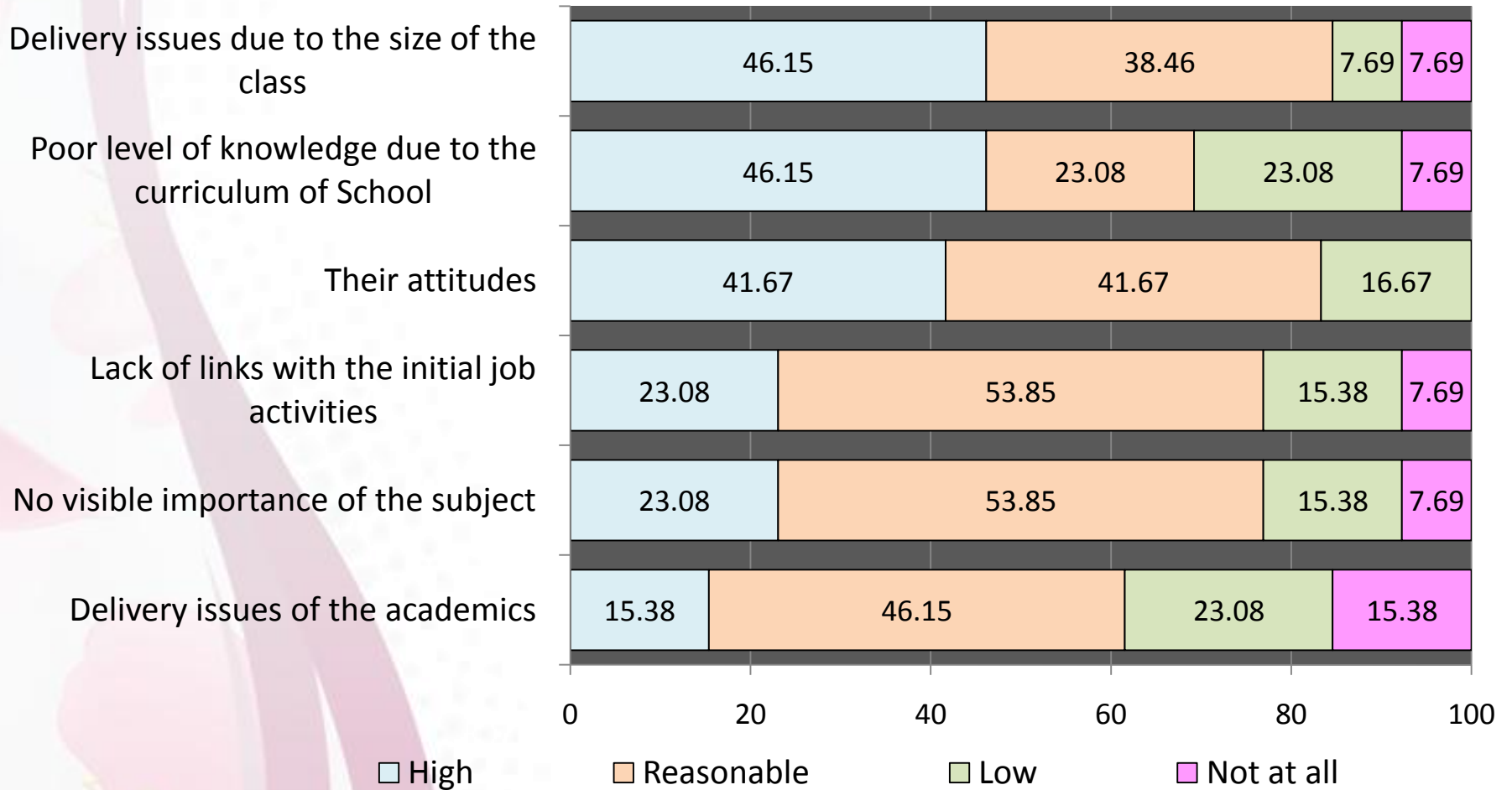
Performance in Mathematics
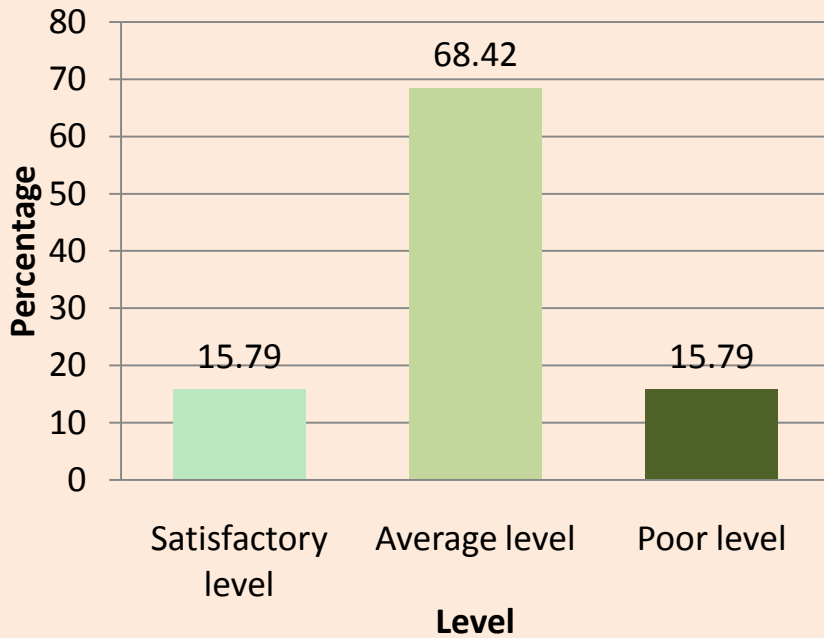
Performance in Statistics

Performance in Statistics is poorer than Mathematics

Identified Issues for Poor Performances
In Mathematics

Identified Issues For Poor Performances
In Statistics

Issue	High	Reasonable	Low	Not at all
Poor level of analytical ability	54.55	45.45		
Delivery issues due to the size of the class	45.45	54.55		
No visible importance of the subject	40.00	40.00	10.00	10.00
Lack of links with the initial job activities	36.36	45.45	9.09	9.09
Applications of Statistics are not embedded with the other courses	30.00	60.00	10.00	
Delivery issues of the academics	27.27	27.27	36.36	9.09
Courses are not offering at the correct time period	27.27	27.27	27.27	18.18
Lack of interest in mathematical calculations	27.27	63.64	9.09	

Contradictory Issues

New graduates identified Statistics as a highly linked subject with their initial jobs. But majority (82%) of the academics are not in the same view. They think it is one issue for poor performance.

Suggestions :

Issues – can be solved by the academics and the Curriculum

"Visible importance is not there" is one issue identified by the academics.

Suggestions :

"Applications not embedded with other courses"

Suggestions :

"Delivery issues of Academics"

Suggestions :

"Poor Level of analytical ability" and "Lack of interest in Mathematics" again linked with the School Curriculum issues.

Suggestions :

"Delivery issues due to the size of the class"
Suggestions :

Problems Identified– Undergraduate level

- Curriculum not able to highlight the importance of analytical subjects
- No culture to conduct researches with the students. Their Research interest and the awareness is at poor level.
- Academics
  - ✓ fail to build positive attitudes among students
  - ✓ fail to convince the linkages of the subjects and their applications in the labour market.
- Lack of awareness regarding the applications of the subject.

Finally, Analytical Ability of Management Undergraduates depends on

Attitudes regarding studying Mathematics, **relevance** for their field of study, self **motivation** and motivation given by the teacher, **confidence** about the subject, and the **liking** for the subject show significant relationships with the Analytical Performances of a Management undergraduate (Wedage, De Silva, & Gunatilake, 2012)

Findings of this study

- *School education of Mathematics affected to the self and overall confidence, positive attitudes and liking for the subject.*
- *Motivation by the teacher, positive attitudes and the confidence about the subject encouraged them to attend lectures.*
- *Time spent for studying mathematics has a significant relationship with the liking for the subject.*
- *Motivation given by the lecturer, positive attitudes and self confidence has increased the willingness of a student to study more.*
- *Self Confidence has a mediating impact on attitude and liking. Hence, attitude and liking can develop the confidence in the student and it leads to better performance.*
- *Finally Motivation, Confidence and Relevance are significantly influencing the performance of the student.*

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- Academic staff members and students of University of Eastern
- Academic staff members and students of University of Kelaniya
- Academic staff members and students of University of Colombo

References

- Allen, J., & Velden, R. V. D. (2001). Educational Mismatches versus Skill Mismatches: Effects on Wages, Job Satisfaction, and On-the-Job Search. *Oxford Economic Papers, 53*(3), 434–452.

- Archer, W., & Davison, J. (2008). Graduate employability: What do employers think and want. Retrieved May 13, 2014, from http://www.empscompacts.org.uk/resources/LincsandRutland/Grademployability.pdf

- Ariyawansa, R. G. (2008). Employability of Graduates of Sri Lankan Universities. *Sri Lankan Journal of Human Resource Management*, *1*(2), 91–104.

- Astin, A. W. (1999). Student Involvement: A Developmental Theory for Higher Education. *Journal of College Student Development*, *40*(5), 518–529.

- Farooq, S. (2011). Mismatch between Education and Occupation - A Case Study of Pakistani Graduates. *The Pakistan Development Review*, *50*(4), 531–552.

- Gibbs, P. T. (2000). Isn' t higher education employability?. Journal of Vocational Education & Training, 52(4), pp. 559-571.

- Gil-Galván, R. (2011). Study on the job satisfaction of graduates and received training in the university. *Procedia - Social and Behavioral Sciences*, *28*, 526–529.

References

- Green, D. (1994). What is Quality in Higher Education? Concepts, policy and Practice. In D. Green (Ed.), *What is Quality in Higher Education?* (pp. 3–20.). Society for Research into Higher Education & Open University Press.

- Hesketh, A. J. (2000). Recruiting an Elite? Employers' perceptions of graduate education and training. *Journal of Education and Work*, *13*(3), 245–271.

- HETC, (2012). Higher Education for the Twenty First Century, Graduand Employment - HETC Report 2012. Retrieved June 12, 2015, from http://www.mohe.gov.lk/index.php/en/ universities-and-institutes/employability-study-of-university-graduands

- http://www.eugc.ac.lk/qaa/

- Kuh, G. D. (2008). High Impact Educational Pracices. Retrieved August 20, 2015, from http://accreditation.ncsu.edu/sites/accreditation.ncsu.edu/files/Kuh_HighImpactActivities.pdf.

- Mamun, M. A. A. (2012). The Soft Skills Education for the Vocational Graduate: Value as Work Readiness Skills. *British Journal of Education, Society & Behavioural Science*, *2*(4), 326–338.

- National Survey of Student Engagement NSSE. (2000). National Benchmarks of Effective Educational Practice. Retrieved May 20, 2015, from http://nsse.indiana.edu/pdf/NSSE 2000 National Report.pdf.

References

- Oliveira, O. De, & Ferreira, E. (2009). Adaptation and application of the SERVQUAL scale in higher education. In *POMS 20th Annual Conference*. Orlando, Florida.

- Vilka, L., & Pelse, I. (2012). Deficiency of employability capacity. Retrieved from http://www.shs-conferences.org/articles/shsconf/pdf/2012/02/shsconf_shw2010_00039.pdf

- Wedage, D.M., De Silva. M.W.A. and Gunatilake, P.D.H.D, (2012**).** An Analysis of Factors Affecting to Performance in Mathematics: Perspective of the first year students in Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Sri Lanka. Proceeding of the International Conference on "Applications of Mathematics and Statistics (HICAMS-2012)", Department of Mathematics, Bishop Heber College, Tiruchirappalli, Tamilnadu, India.

- Yorke, M. (2005). Formative assessment in higher education: Its significance for employability, and steps towards its enhancement. *Tertiary Education and Management*, *11*(3), 219–238.