UNIVERSITÀ DI PISA

BUSINESS AND PROJECT MANAGEMENT

ANDREA BONACCORSI

Academic year	2020/21
Course	ARTIFICIAL INTELLIGENCE AND DATA ENGINEERING
Code	875II
Credits	9

Modules	Area	Type	Hours	Teacher(s)
BUSINESS AND PROJECT MANAGEMENT	ING-IND/35	LEZIONI	90	PAOLA BELINGHERI ANDREA BONACCORSI

Programma (contenuti dell'insegnamento)

Business and project management
Prof. Andrea Bonaccorsi
Ing. Paola Belingheri

Academic Year 2020-2021
Outline of the course

Introduction
The course has the goal of introducing students to the complexity of management of modern companies. It may be considered a short version of an MBA programme, tailored to the needs ot students in Computer Engineering and Business Informatics.
This means that students will be led to understand in depth the performance and technical requirements that IT systems must meet in the business context.
The course will be based on a succinct, yet rigorous, analytical foundation in Microeconomics.
The topics follow a traditional top down approach: first we will examine the strategic, long term decisions of firms (where, why and how to compete), then we will go through the main functional areas (marketing, operations, purchasing, logistics, quality), finally we will study the way in which companies track and measure their economic and financial performance.
Issues of organizational design, change, and business process mapping are dealt at the end of the course. Students will benefit from a first-hand knowledge of the main business processes discusses in the core part of the course, in order to discuss how to improve them based on IT solutions.
The course will be supplemented by a new module on Project Management (30 hours), which will offer the foundations of the management of complex business initiatives, as well as the practical skills needed to run projects in the field of IT and software development in the business context.

Outline **1. Analytical foundations in Microeconomics** Theory of the firm

- Production function
- Production capacity and optimal production size
- Cost functions. Variability regimes. Decreasing returns. Breakeven analysis.
- Cost minimization in the short run and long run. Economies of scale, scope and learning

Consumer theory

- Preferences and budget constraint
- Demand function.
- Cross-elasticity. Differentiation. Complementarity and substitution.

2. Strategic management Industry structure and types of competition

- Industry concentration. Herfindahl index. Entropy measures
- Definition and measurement of market power

Definition of the boundaries of competition
- Abell model. Ansoff matrix. Blue ocean.
- Diversification. Theory and applications to IT industries
Structural models of competition

- Porter model. Generic strategies. Strategic groups.
- Strategic management and financial performance

Strategic intelligence

- PESTEL framework. Scenario planning. Raodmapping.
- Main sources of data and market intelligence
- Perspectives from Big Data

3. **Strategic marketing** Segmentation

- Variables for segmentation.
- Multivariate statistical models for segmentation. PCA, Correspondence analysis, Cluster, MDS.

Targeting

- Models of segment market selection. BAMA model. BCG matrix

Positioning

- Conceptual mapping. Positioning and mobility in conceptual maps.

Customer Relationship Management

- Operational applications of CRM
- Analytics

4. **Operational marketing** Product policy

- Product line definition, management and extension.
- Product Life Cycle
- Introduction to New product development (NPD) and product innovation

Place policy

- Definition of marketing channels.Models of choice of modes of entry. Conflict and power in marketing channels.
- Multichannel entry. Applications to market entry in IT/digital markets.

Branding and communication Pricing Introduction to Web marketing

5. **Operations management** Classification of manufacturing processes. Capacity planning. Production planning

- Just-in-time production models
- MRP I. MRP II. Quick Response Manufacturing. Models of manufacturing excellence
- Introduction to ERP

6. **Supply chain management** Purchasing management

- Monzcka's model of purchasing management. Kraljic matrix
- Supplier selection models. Vendor rating models
- Involvement of suppliers in the order cycle
- Early supplier involvement in product innovation

Logistic management

- Main operational approaches in logistics
- Inventory Management
- Vendor Managed Inventory

Supply chain management

7. **Lean management**

Total Quality Management

- Principles of Quality Assurance. Deming cycle.
- Seven tools of Quality Assurance. Root cause analysis.
- Toyota model of TQM

Lean management

- Principles of Lean management. Value Stream Mapping.
- Kanban.
- Continuous improvement (CI).

Six Sigma

- Statistical foundations of Six Sigma
- Criticism to Six Sigma and integrated models

8. **Financial management** Principles of accounting

- Balance sheet
- Economic and financial variables
- Management accounting. Activity Based Costing (ABC).
- Investment appraisal. DCF.

Performance ratios

- Economic performance ratios
- Financial performance ratios

Integrated models

- Balanced Scorecard (BSC)
- Economic Value Analysis
- Value analysis in IT applications

10.Project management

Teaching materials Course materials
CREATE (a collection of chapters from McGraw Hill Textbooks) Business and Project Management.
ISBN 9781307671469
Harold Kerzner, Project Management: A Systems Approach To Planning, Scheduling and Controlling (12th Edition), Wiley. Slides + Supplementary readings
Prentice Hall- Financial Times series on Key management tools.

- van Assen, van den Berg, Pietersma (2009) *Key management models*
- Walsh (2008) *Key management ratios*
- Marr (2012) *Key performance indicators (KPI)*
- Farris (2017) *Key marketing metrics*

Examination

The examination will be written and oral.
The written examination will have two parts
In Part 1 students will be required to develop a team project. The class will be divided in a number of small teams depending on the size of the attendance, Each member of the team will have to become a specialist in one of the main business areas and will be asked to integrate the study of the textbook with a dedicated book (suggested by the teacher) or a collection of research articles. The specialist skills will also be the object of oral examination. The project will be developed starting Week 2 of the course.
In Part 2 students will evaluate the project of other teams and make managerial decisions. Decisions to be discussed will be changed each time.
The oral examination will cover the entire outline of the course.
Non-attendant students will be required to sketch a full scale project during the written examination.

Bibliografia e materiale didattico

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