

STRATEGIC DECISION MAKING CYCLE IN HIGHER EDUCATION: CASE STUDY OF E-LEARNING

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higher **DECISION**



Why decision making in HE?

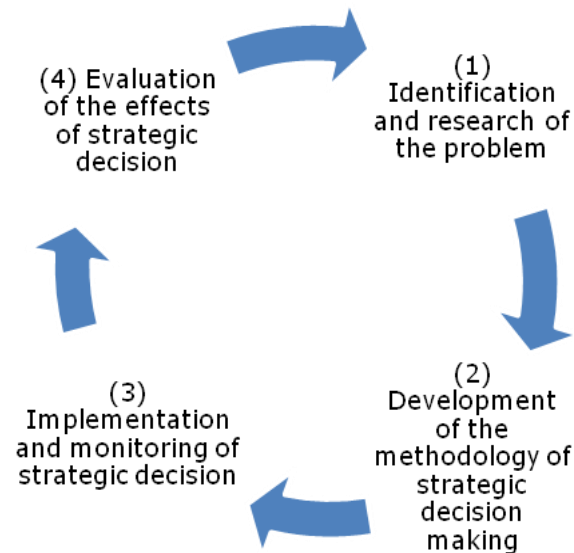
- **Education** – a mechanism for expanding economic opportunities, enhancing social mobility, developing a skilled workforce, preparing young people to participate in civic life (Murnane, Willett, 2011)
- **Higher education (HE)** is far more important to the national economic growth than primary or secondary education (DePillis & DePillis, 2001)
- Relatively few studies comprehensively deal with strategic decisions making (DM) and strategic management in HE
- Tension between **exploitation** (learning as usual) and **exploration** (exceptional learning) strategy (Meyer, 2007)
- DM in different organizational frames (Manning, 2013)
- The way in which HE **meets** its **mission** is becoming a first-class research problem (Cortés-Aldana et al., 2009).
- Demystify DM in HE, research on, recommend, develop new methods...

The Higher Decision project

- **Project: Development of a methodological framework for strategic decision-making in higher education – a case of open and distance learning implementation** – financed by Croatian Science Foundation
- Implemented by: University of Zagreb - Faculty of Organization and Informatics
- Partner institutions: University of Split, SRCE, companies, school
- Experts from University of Edinburgh and K.U. Leuven
- Project duration: 4 years (June 2015 – May 2019)
- **Primary goal** of research: **develop a comprehensive methodology for strategic decision making and the monitoring of its implementation in HE**
- **Two basic components** of the project:
 - **1. Development of methodological framework** for strategic decision making and monitoring of its implementation
 - **2. Application, adjustment and evaluation** of our methodology on the example of decision implementation on e-learning and distance learning

Cycle of strategic decision making

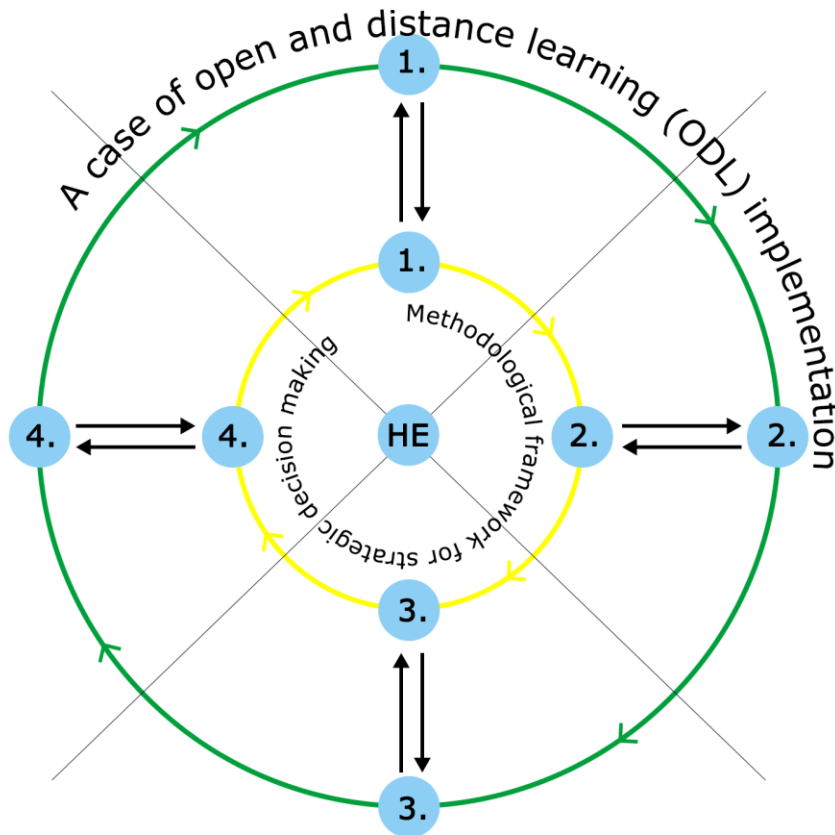
- Initial pattern of the process form that will be investigated and improved:
- Deming cycle (P (Plan) – D (Do) – C (Check) A (Act) circle) and
- Dyer's model of decision making and implementation (Dyer, 1991)



Strategic decision making...

Double cycle of strategic decision making

Verification via a case study research - the implementation of **e-learning including open and distance learning**



- I. Development of a methodological framework for strategic decision-making in higher education
 - II. Application, adaptation and evaluation of methodological framework in case of open and distance learning (ODL) implementation
1. Problem identification and analysis
 2. Design of a methodology for decision making and decision making
 3. Implementation and monitoring the of strategic decisions
 4. Evaluation of strategic decision implementation

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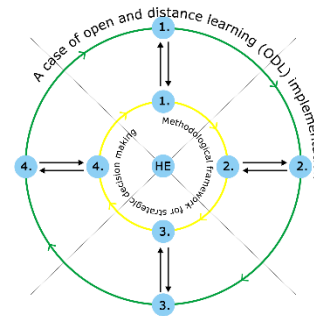
Methodology

- HE, by its position and values, significantly differs from the business sector and other parts of the public sector
- Interdisciplinary:
 - Information sciences
 - Educational sciences
 - Mathematics, Statistics ...
- Approaches:
 - Constructivist approach (understanding the social, economic and development context)
 - Postpositivistic approach (empirical observation and measurement)
 - Mathematical modelling (development of methods and techniques and their consolidation in solving the problem of preparation, implementation and evaluation of strategic decisions in HE)

Strategic decision making...

1. Identification & research – e-learning in HE

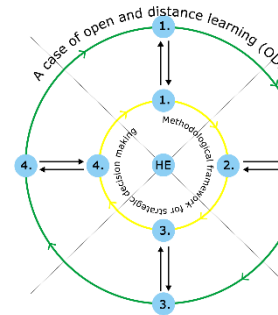
- Problem identification & Conducting of the problem research
 - situation analysis
 - methodology for institution readiness assessment
- **Diffusion of innovation** (DOI) developed by (Rogers, 2003) – modified (Buć, Divjak, 2015) – [poster here](#)
 - (1) Initiation, - information gathering, conceptualization, planning for adoption of innovation
 - (2) Implementation - events, actions and decisions for putting the innovation into use
- **Success indicators** for e-learning diffusion into HE institution:
 - leadership and strategic alignment
 - dedicated change agents among staff and students
 - e-learning usefulness recognized by staff and students
 - innovation in teaching
 - appropriate organization and support structure for staff and students
 - technical infrastructure
 - quality assurance of e-learning ...



Strategic decision making...

2. Design of DM methodology – e-learning in HE

- Three basic stages:
 - 1) choosing the most appropriate multi-criteria decision making methods (MCDM)
 - 2) improving methods for MCDM,
 - 3) building models for DM using MDCM
- **Stage 1**- choosing the methods for DM in HE :
 - support for problem structuring, multiple criteria DM, support for modeling dependencies between elements, criteria expressed in qualitative and quantitative scales, support for group DM, sensitivity analysis and risk analysis, cost-benefit analysis
 - existing methods for MCDM meet these requirements only partially - to improve the methods in order to fit strategic DM in HE
 - starting point were AHP/ANP (Analytic Hierarchy Process) (Saaty, 2001)
- **Stage 2** – improving the methods for MCDM :
 - AHP provides a hierarchical structuring of DM problems, ANP models provide interdependencies via network
 - AHP/ANP can be used to create a BOCR (Benefits, Opportunities, Costs, Risks) models for group DM in HE

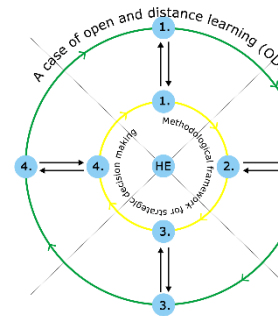


2. Design of DM methodology – e-learning in HE

- **Stage 2 – ...**
 - PESTLE analysis for scanning political, economic, social and technological factors
 - PROMETHEE, ELECTRE, and the ideal point-based multi-criteria decision methods - for solving a specific problem in HE
 - Multi-criteria variant of cost-benefit analysis - for cost-benefit analysis in HE
 - Hybrid methodology for risk management - Monte Carlo simulation for the analysis of financial risks. Sensitivity analysis for risks management associated with prioritization
- **Stage 3 – building models for DM using MDCM**
 - building models for decision making using improved methods for MCDM
 - qualitative analysis, survey, factor analysis for defining criteria and alternatives
 - clustering to determine participants in the process of group DM
- **individual /group decision making**
 - AHP/ANP BOCR models helps groups to structure decision into criteria and alternatives, prioritize criteria and alternatives, and justify decisions using sensitivity analysis
 - results - objective's relative significance and priorities of the alternatives

3. Implementation & monitoring– e-learning in HE

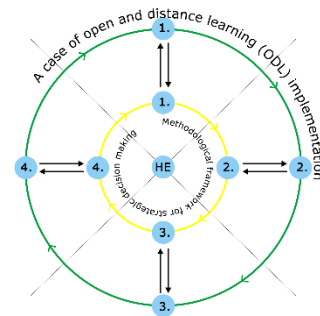
- parallel to the implementation of the best alternative, it is crucial to have monitoring
- implementation of strategic decisions requires the adoption of related action plan or/and streamling on regular bases
- methodology for implementation and monitoring is based on the following methods:
 - 1) **BSC Balanced Scorecard** in order to define **KPIs** (Key Performance Indicators) to monitor the implementation of strategic decision
 - 2) **Enterprise Architecture for BPM** (Business Process Management) for modelling and management of activities
 - 3) **CMMI (Capability Maturity Model Integration)** to assess the level of process capability and maturity of organizations for the implementation of strategic decisions.



Strategic decision making...

4. Evaluation of the effects of strategic decision – e-learning in HE

- Process evaluation vs Outcome evaluation
- Quantitative
 - econometric analysis, cost-benefit analysis, multi-criteria analysis, regression analysis etc.
 - Learning analytics for e-learning implementation
- Qualitative
 - stakeholder perspective, document analysis, internal consistency of the strategy, and external effectiveness, benchmarking, in-depth case study, Delphi panel, etc.
- Pearl's interpretation of causality
 - enables quantitative modelling of causal concepts in dynamic systems
 - structural causal models
 - go beyond the black box approach of Bayesian networks or structural equations models
 - SCM's enable explanation, prediction and even quantitative modelling
 - applications so far artificial intelligence, epidemiology, social sciences, imperfect experiments



Summary & upgrades (Divjak & Begičević, IADIS, 2015)

Phase of the cycle	Approaches	Specifics of HE and e-learning	Methods
Identification and research of the problem	Needs and situation analysis Readiness assessment DOI	Stakeholders' involvement E-readiness Consciousness raising	Situation analysis Case study research & qualitative analysis Structural Equation Modelling (SEM) Social Network Analysis (SNA) Upgraded methodology for e-readiness assess.
Development of methodology for DM	Analysis of potential solutions MCDM Cost-benefit and risk analysis	Benchmarking of HEIs Modelling dependencies and group DM	BOCR AHP and ANP, PROMETHEE, ELECTRE Ideal point-based MCDM Multi-criteria variant of cost-benefit analysis Hybrid methodology of risk management – Monte Carlo simulation and Sensitivity analysis Qualitative analysis; Factor analysis, Clustering
Implementation and strategic decision monitoring	BSC, KPI, BPM CMMI PPM	Interpretations of econometrics and use of KPIs and PPM	BSC Balanced Scorecard Enterprise Architecture for BPM CMMI (Capability Maturity Model Integration) Econometric methods (ROI, productivity, efficiency, profitability)
Evaluation of effects of the strategic decisions	Qualitative, quantitative and mixed methods Structural causal models	Stakeholder perspective In-depth case study to find out causes & effects	Qualitative methods - stakeholder perspective, document analysis, internal consistency..., in-depth case study, Delphi Quantitative methods - econometric analysis, cost-benefit analysis, multi-criteria & regression analysis Pearl's structural causal models

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**THANK YOU!
LET'S DISCUSS!**



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