


**NCCIT'08**

 The 4<sup>th</sup> National Conference on Computing and Information Technology

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## A Web-Based Decision Support System for Evaluation of

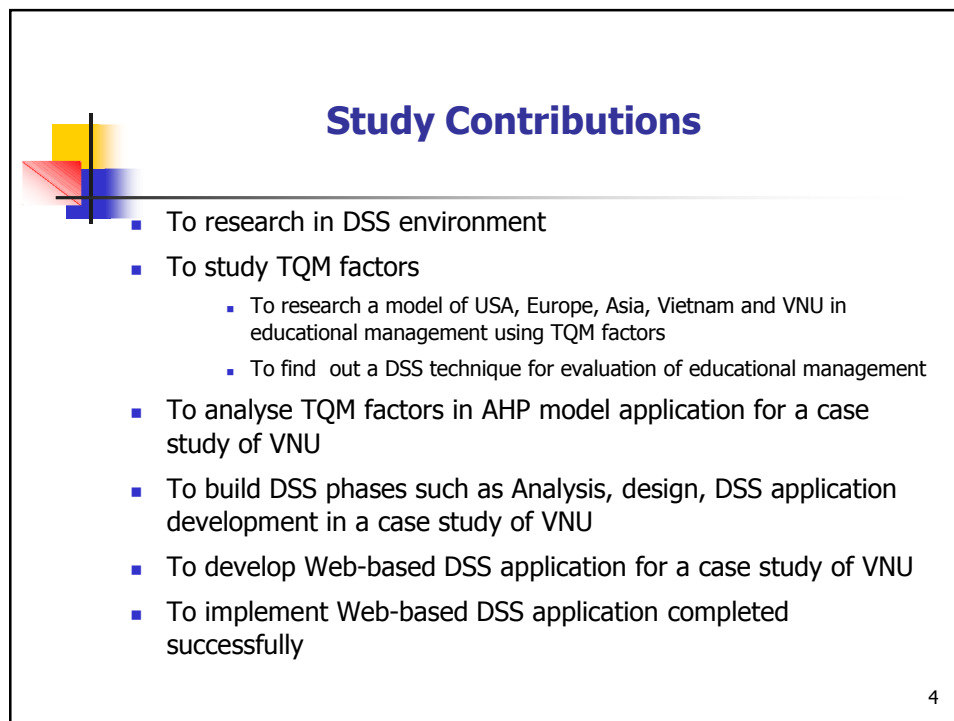
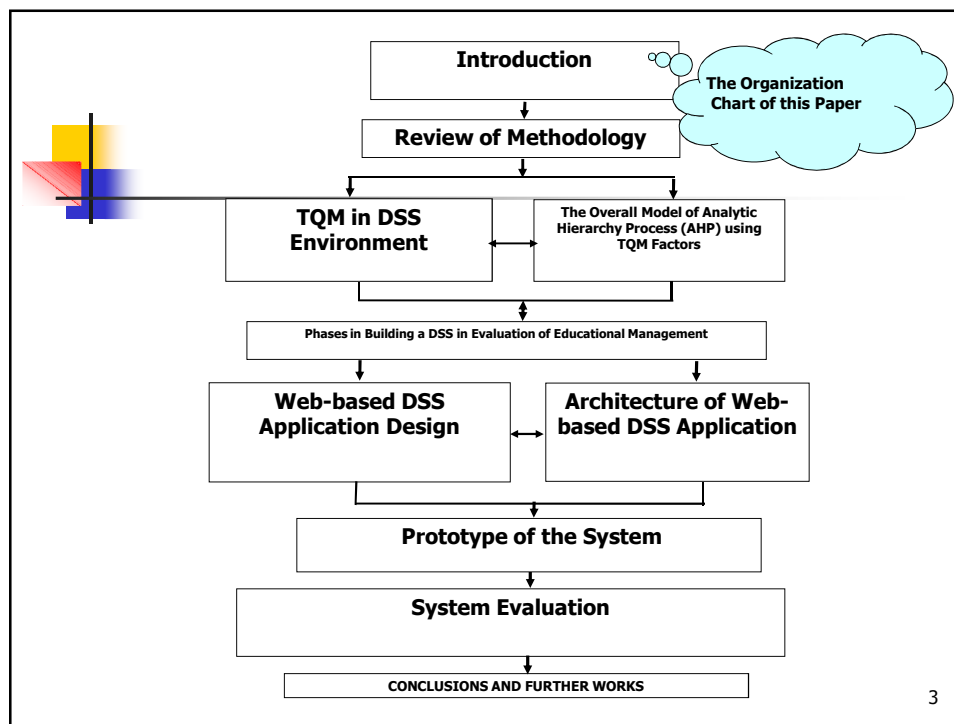
## Educational Management: A Case Study of University in Vietnam

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## Objectives

### ■ The study is to develop a DSS application for evaluation of training quality and quality assurance in educational management of university

- To understand and analyze the principle of both TQM factors of training quality, quality assurance of higher education in university's management.
- To apply a method of Analytic Hierarchy Process (AHP) in DSS in order to evaluate quality of educational management effectively in university.
- To develop and implement Web-based DSS using a case study of Vietnam National University Hanoi (VNU) to evaluate training quality and quality assurance based on TQM factors.

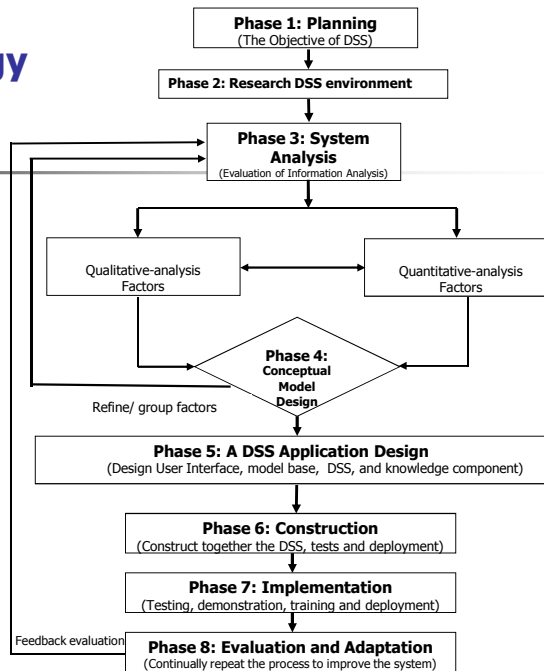


## Scope of Study

- **Domain:**
  - Training quality and quality assurance in higher education of university
  - TQM factors for evaluation of educational management
- **The scope of system:** a case study of Vietnam National University Hanoi (VNU)
- **Web-based DSS application:** developed and implemented successfully Web-based DSS application for a case study of VNU

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## Methodology



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## Phases in Building a DSS



- **Phase 1 - Planning:** a DSS objective is to evaluate training quality and quality assurance of university using TQM factors in educational management.
- **Phase 2 - Research DSS environment**
  - TQM factors have a significant role in evaluation of training quality and quality assurance of university in order to improve its overall quality of educational organization in effectiveness.
- **Phase 3 - System analysis:**
  - To collect data and analyze both TQM factors and construct a specific purpose of educational management.
  - To built up the model of a conceptual design based on TQM factors of educational organization.

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## Phases in Building a DSS...

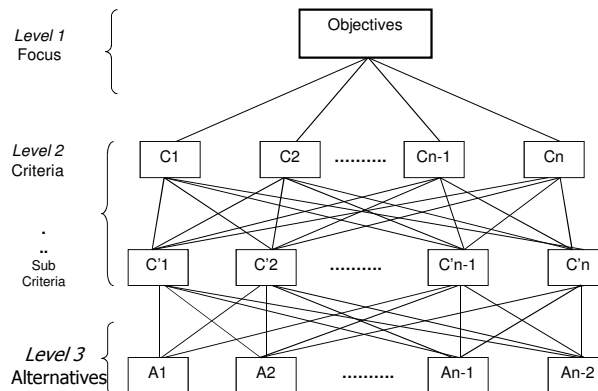


- **Phase 4 - Conceptual model design:**
  - To combine with a specific analysis and initial design steps.
  - To design a DSS application applying in a domain is a combination with both DSS knowledge and software engineering theory.
- **Phase 5 - DSS application design:**
  - To identify the detailed specifications of the system components, structure, and features.
  - The design can be divided into four parts corresponding to the major components of a DSS such as design user interface, design problem processing system, design DSS database and design knowledge component.
- **Phase 6 - Construction phase:** A DSS application can be constructed with different purposes depending on the design and tools used.
- **Phase 7 - Implementation phase** this phase consists of the following tasks: server configuration, setting up database server, program implementation and testing.
- **Phase 8 - Evaluation and Adaptation phase:**
  - Evaluation part is very important of the development process
  - The adaptation step requires recycling through the analysis step and responses to adapt customer needs.

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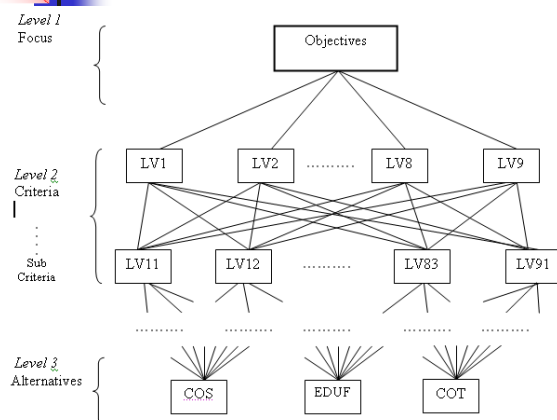
## The overall model of Analytic Hierarchy Process (AHP) using TQM Factors

Structure model of the AHP hierarchy



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## The model of Analytic Hierarchy Process (AHP) using TQM Factors



The primary TQM factors of VNU consists of 9 criteria (*organization and university management, instructor and staff, student, teaching and learning, scientific research, facility, funding, consulting and transfer technology service, and international relations*) and 33 significant factors of educational management.

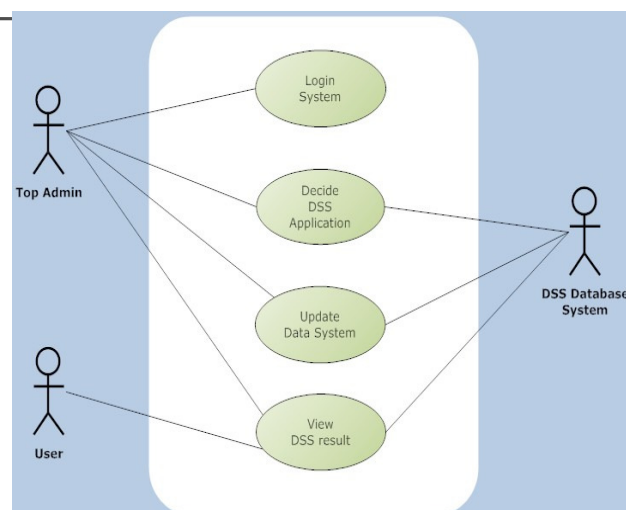
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## DSS / a Group Decision Support System (GDSS) for VNU

No	Domain name	Training Quality and Quality Assurance of VNU	
	<b>Decision Maker/ Group Decision Maker</b>	Evaluation of the domain in specifications	
	<b>DSS/GDSS identification</b>	TQM Evaluation ( a group of experts)	TQM Evaluation ( Decision maker)
	Top administration (Dean)		X
	Top Staff	X	
	Top Instructor	X	
	<b>Alternatives</b>	TQM evaluation for faculty / college of VNU	

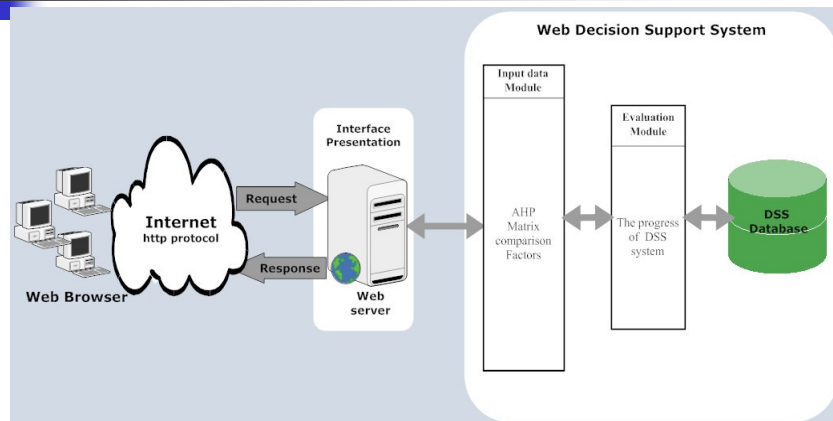
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## Use Case Diagram of Web-based DSS Application



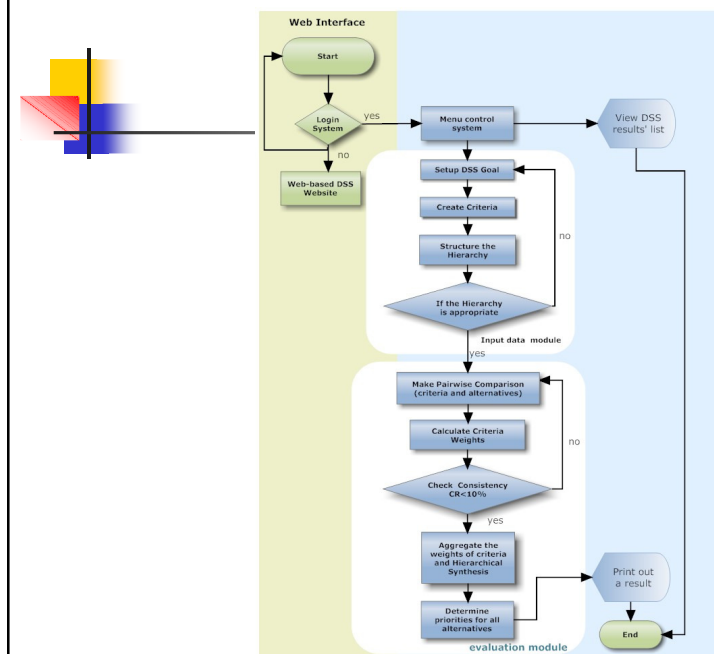
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## Architecture of Web-based DSS Application



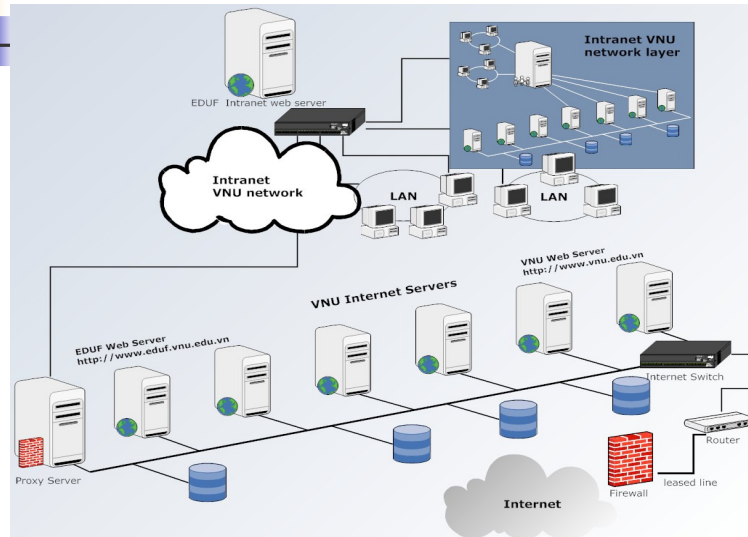
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## Prototype of Web-based DSS Application



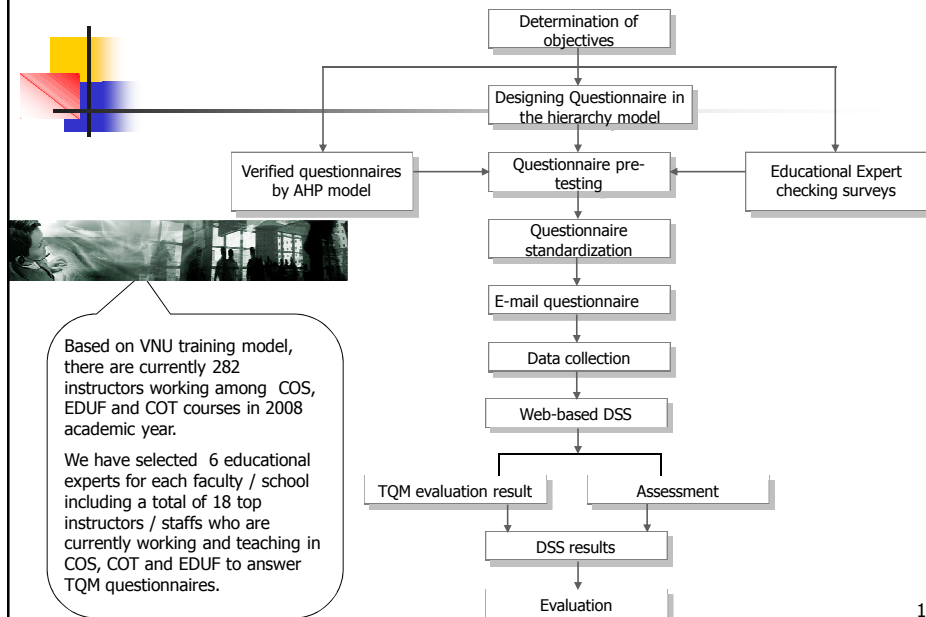
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## Web-based DSS implementation



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## Questionnaire Design and Data Collection Method



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## Conclusions

- The study has opened a new way of DSS application in educational management. For VNU training model, Web-based DSS application using TQM factors is the first academic research achievement in Vietnam and Asia.
- Among DSS algorithms, Analytic Hierarchy Process (AHP) is a candidate in decision making using multi criteria of educational management.
- This study shows not only phases of system development for Web-based DSS application but also implements in a real case study of VNU
- The Web-based DSS application implementation has completed successfully using full features of Web-based DSS application for various purposes in educational management.

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## Future work

- In some complex cases of decision making, decision factors might be depended on each other. The AHP model with feedback and factor dependency. The Annalistic Network Process (ANP) technique assumes dependency of factors on alternatives being considered. Therefore, solving problem in difficult cases in educational management needs to combine both AHP and ANP techniques.
- AHP model using TQM factors can be applied to many types of decision making in educational management such as prediction, forecasting, planning and evaluation.

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## DEMO Web-based DSS Application



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Thank you very much for your attentions!

## Questions & Answers

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