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Title of Thesis: **“IDENTIFICATION AND MODELLING OF ANTECEDENTS OF SERVICE QUALITY GAPS IN THE INDIAN ITES SECTOR”**

ABSTRACT

INTRODUCTION:

This research is set in the context of IT Enabled Services (ITeS) which have been a subject of considerable interest for both researchers and practitioners. While the Indian ITeS Sector has shown tremendous growth, it faces several challenges, the prime being service quality. Moreover, if the services being offered are high-end and knowledge intensive, the inherent complexity of the task domain renders quality management difficult and raises the following challenges: Firstly, the factors that affect service quality in ITeS are different from those proposed by traditional service models (SERVQUAL). Secondly, standard quality management frameworks adopted by Indian service providers in context of traditional services cannot be applied in high-end services as the operational data used for measurement and monitoring is unstructured and qualitative.

In the above context, this thesis identifies the antecedents to service quality gaps in Indian ITeS sector. The thesis also presents an artificial intelligence (AI) based model that utilizes qualitative operational data to identify and model these antecedents. Finally, the thesis demonstrates the scope of such a system in supporting decision making for quality gaps reduction in context of high-end services such as outsourcing of engineering designs.

Conducted as a multi-method inter-disciplinary research, the thesis describes how confluence of theoretical underpinnings from operations research, industrial mathematics and computer science can be effectively applied in service quality modelling.

RESEARCH FINDINGS:

- **Antecedents to the Service Quality Gaps:** Using qualitative and quantitative research methods, the following antecedents to service quality gaps were identified: Knowledge Management, People Management, Performance Evaluation, Service Design and Delivery, and, Technology Management. Verification of these antecedents using a regression model established positive and significant correlation between these factors and success of an ITeS project. Furthermore, strong and significant correlations between Knowledge Management and the other four antecedents implied that effective Knowledge Management positively affects the other antecedents and reduces quality gaps by facilitating learning.

- **Use of AI-Based System for Modelling the Antecedents:** Deriving from the understanding of role of computer based systems in quality management; the thesis presents the conceptual model of the decision support system for modelling the antecedents. The conceptual model proposed use of AI-based techniques for knowledge partitioning with a view to extract data-related, task-related and control-related knowledge from qualitative operational data. The conceptual model shows these systems can analyze qualitative data to describes facts (“what”), identify antecedents (“why”) of quality gaps, and finally define the processes (“how”) for service quality gap mitigation. Based on this conceptual model, SWAYAM SIDDHA: the Service Quality Gap Modeller and Analyzer was designed and developed.
- **Establishing Quality Management Role of SWAYAM SIDDHA, the AI-based system:** The SWAYAM SIDDHA was tested with real-life data from an organization providing high-end ITeS. The test runs established that AI-based systems have the ability to analyze large volumes of qualitative operational data with reduced effort to extract and partition implicit knowledge. These systems facilitate re-use of knowledge for problem recognition and decision making for quality management by identifying the causes of quality gaps and suggesting remedial processes.
- **Establishing Self-Learning Role of SWAYAM SIDDHA:** Testing of the SWAYAM SIDDHA established its validity, usability and extensibility as a self-learning service quality management system. The tests established that as the system is used with more data a saturation point would be reached beyond which the system would work as an experienced scholar in a self-learning mode with little help from the supervisors; requiring less knowledge creation and more knowledge utilization.

CONCLUSION:

This research identifies Knowledge Management, People Management, Performance Evaluation, Service Design and Delivery, and, Technology Management as the antecedents to service quality gaps in Indian high-end ITeS. Development and testing of the SWAYAM SIDDHA resulted in the following specific conclusions: First, qualitative operational data has knowledge inherent in it. Extraction of the contextual knowledge results in creation of control-related knowledge within organizational setups. Second, the study also provided evidence that AI-based systems have the potential to enable quality management by extracting knowledge from operational data to identify processes for plugging the service quality gaps.

The system built and tested during the study can be straight away scaled-up and deployed in the field. It can also be used for carrying out further research in other related ITeS scenarios for studying the differences among various types of services depending on the nature and availability of qualitative data.