

**DECISION SUPPORT SYSTEMS ADOPTION AMONG
STRATEGIC DECISION MAKERS IN HIGHER LEARNING
INSTITUTIONS IN YEMEN**

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Abstrak

Institusi pengajian di Yaman tidak mempunyai visi, misi dan objektif strategi yang jelas, yang mana institusi ini mengamalkan sistem pengurusan secara tradisi dengan prosedur yang kompleks. Tambahan pula, terdapat sikap tidak ambil peduli terhadap teknologi dalam kalangan pembuat keputusan strategi di Yaman kerana mereka tidak mempunyai pandangan yang jelas tentang apa aplikasi Teknologi Maklumat (IT) yang mampu menyumbang ke arah pembangunan institusi mereka. Oleh itu, kajian ini bertujuan untuk mengenal pasti keputusan strategi pengajian tinggi di Yaman dan gaya pembuat keputusan strategi oleh pembuat keputusan strategi serta menyiasat tanggapan oleh pembuat keputusan strategik terhadap teknologi *decision support systems* (DSS). Bagi tujuan ini, *Unified Theory of Acceptance and Use of Technology* (UTAUT) digunakan. Sejumlah 121 borang soal selidik telah dikutip daripada sekumpulan pembuat keputusan strategik di Universiti Sana'a dan Universiti Sains dan Teknologi. Analisis deskriptif, pemodelan regresi dan analisis model persamaan berstruktur telah dijalankan bagi menguji hipotesis. Kajian ini mendapati bahawa dasar penyelidikan, penggunaan aplikasi teknologi maklumat, kurikulum, misi, organisasi kolej dan universiti, dasar kemasukan, dasar kewangan, kemudahan dan peralatan, dan personel tadbir urus institusi merupakan perkara yang memerlukan keputusan strategik dibuat di institusi pengajian tinggi di Yaman. Berkenaan dengan gaya pembuat keputusan, kajian ini mendapati bahawa kebanyakan pembuat keputusan strategik adalah mereka yang berorientasikan teknikal (analitikal dan direktif). Kajian ini juga mendapati bahawa jangkaan prestasi, jangkaan usaha, dan jangkaan nilai strategik mempunyai pengaruh yang signifikan dan positif terhadap niat bergelagat oleh pembuat keputusan strategik untuk menggunakan DSS. Walaubagaimanapun, pengaruh sosial hanya mempengaruhi niat tingkah laku apabila diuji secara berasingan sebagai satu konstruk bebas. Gaya pembuat keputusan strategik menyederhanakan hubungan antara jangkaan usaha dan niat tingkah laku sahaja. Pengalaman pentadbiran dan pencapaian profesional menyederhanakan hubungan antara jangkaan prestasi dan jangkaan nilai strategik dengan niat tingkah laku sahaja. Kesimpulannya, penggunaan teknologi boleh dicadangkan sebagai satu bidang keputusan strategik yang baharu.

Kata kunci: Penggunaan teknologi, Pembuat keputusan strategik, Sistem sokongan keputusan, Permodelan persamaan berstruktur

Abstract

It is claimed that higher education institutions in Yemen do not have clear visions, missions, strategic objectives, and they apply traditional management systems with complex procedures. In addition, there has been some ignorance of technology among the Yemeni strategic decision makers because they have not had a clear view of what Information Technology applications can contribute in developing their institutions and the strategic decision-making, and styles of the strategic decision makers. IT applications can also be used in investigating the perceived acceptance of the strategic decision makers towards decision support systems (DSS) technologies. Thus, the unified theory of acceptance and use of technology (UTAUT) has been adopted. A total of 121 forms of questionnaire were collected from the strategic decision makers in Sana'a University and Science and Technology University. Descriptive, regression and structural equation modeling analyses were run to test the hypotheses. The present study found that the research policy, adoption of information technology applications, curriculum, mission, organization of colleges and university, admission policies, financial policies, facilities and equipment, and institutional governance personnel are areas that require strategic decisions in the Yemeni higher learning institutions. Regarding decision making styles, the majority are technical-oriented (analytical and directive) strategic decision makers. The findings indicate that performance expectancy and strategic value expectancy have a significant positive influence on behavioural intention of the strategic decision makers to adopt the DSS. However social influence was found to have influence on behavioural intention when it was tested alone as an independent construct. The strategic decision maker's decision making style moderates the relationship between efforts expectancy and behavioural intention only. However, administrative experience and professional achievement moderate the relationship between performance expectancy and strategic value expectancy, and behavioural intention only. As a conclusion, this study suggests that technology adoption can be a new strategic decision area.

Keywords: Technology adoption, Strategic decision making, Decision, Support systems, Structural equation modeling

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Glossary of Terms

Content Validity An aspect of validity assessing the correspondence between the individual items and the concept through ratings by expert judges, and pre-tests with multiple sub-populations or other means.

Construct Reliability An aspect of reliability measuring the internal consistency of a set of measures rather than the reliability of a single variable.

Construct Validity An aspect of validity testing how well the results obtained from the use of the measure fit the theories around which the test was designed. In other words, construct validity testified that the instrument did tap the concept as theorized.

Convergent Validity It is synonymous with criterion validity and with correlational analysis, and is one way of establishing construct validity.

Dependent Variable It is a variable of primary interest to the study, also known as the criterion variable.

Discriminant Validity It is another way of testing construct validity. A measure has discriminant validity when it has a low correlation with measures of dissimilar concepts. In other words, discriminant validity reflects the extent to which the constructs in a model are different.

Endogenous Latent Construct A latent, multi-item equivalent to a dependent variable. It is a construct that is affected by other constructs in the model.

Exogenous Latent Construct A latent, multi-item equivalent of an independent variable. It is a construct that is not affected by any other construct in the model.

Facilitating Conditions The degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system.

Independent Variable A variable that influences the dependent or criterion variable and accounts for (or explains) its variance.

Information Technology Computer technology, both hardware and software, for processing and storing information, as well as communication technology including networking and telecommunications for transmitting information.

Generalisability The probability that the results of the research findings apply to other subjects, other groups, other settings and other conditions.

Longitudinal Study A research study for which data are gathered at several points in time to answer a research question.

Parsimony (Measure of Parsimony) A model high in parsimony (simplicity) is a model with relatively few parameters and relatively many degrees of freedom. On the other hand, a model with many parameters and few degrees of freedom is said to be complex or lacking in parsimony.

Methods The various means or techniques or procedures used to gather and analyse data related to some research question or hypothesis.

Methodology The strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes.

Moderating Variable The moderator or the moderating variable is one that has a strong contingent effect on the independent variable and dependent variable relationship. That is, the presence of a third variable (the moderating variable) modifies the original relationship between the independent and the dependent variables.

Multicollinearity When the dependent variables are highly correlated this is referred to as multicollinearity.

Perceived Ease of Use The degree to which a person believes that using a particular system would be free of effort.

Perceived Usefulness The degree to which a person believes that using a particular system would enhance his or her job performance.

Pilot Study The study conducts to detect weaknesses in design and instrumentation and to provide proxy data for selection.

Population The entire group of people that the researcher wishes to investigate. In this research it is academics within Business Schools in the Thai Public University Sector who have already had experience in using the Internet.

Pretesting A trial run with a group of participants for the purpose of detecting problems in the questionnaire instructions or design, whether the participants have any difficulty understanding the questionnaire or whether there are any ambiguous or biased questions.

Questionnaire A pre-formulated written set of questions to which participants record their answers, usually within rather closely defined alternatives.

Reliability The extent to which research findings would be the same if the research were to be repeated at a later date, or with a different sample of subjects.

Sample A sample is a subset of the population, comprising some members selected from the population.

Square Multiple Correlation It is used to measure the construct reliability. The square multiple correlation (SMC) is referred to an item reliability coefficient. It is the correlation between a single indicator variable and the construct it measures. In other words, SMC is the proportion of its variance that is accounted for by its predictors.

Social Influence The degree to which an individual perceives that other important persons believe he or she should use the system.

Structural Equation Modelling A multivariate technique combine aspects of multiple regression (examining dependence relationships) and factor analysis (representing unmeasured concepts-factors with multiple variables) to estimate a series of interrelated dependence relationships simultaneously.

Subjective Norm The social pressure exerted on the person or the decision maker to perform the behaviour. It refers to an individual's perception about what other people think of his or her behaviour in question.

Theoretical Framework A collection of theories and models from the literature which underpins a positivistic research study. It is a conceptual model of how the researcher theorises or makes logical sense of the relationships among the several factors that have been identified as important to the problem. The theoretical framework may be referred to as a conceptual framework or as the research model. These three terms are used interchangeably in this research.

Validity The extent to which the data collected truly reflects the phenomenon being studied.

List of Abbreviations

AE	Administrative experience
AGFI	Adjusted goodness-of-fit index
AMOS	Analysis of moment structures
BI	Behavioral intention
CFI	Comparative fit index
C-TAM-TPB	Combined TAM and TPB
DF	Degrees of freedom
DMS	Decision making style
DS	Decision style
DSI	Decision style inventory
DTPB	Decomposed theory of planned behavior
DW	Data warehouses
EE	Effort expectancy
EIS	Executive information systems
ES	Expert systems
FC	Facilitating conditions
GFI	Goodness- of-fit index
GDSS	Group decision support systems
IDT	Innovations diffusion theory
IS	Information system
IT	Information technology
MI	Modification indexes
ML	Maximum likelihood
MM	Motivational model
MPCU	Model of personal computer utilization
NFI	Normed fit index
OLAP	Online analytical process
PA	Professional achievement
PE	Performance expectancy
PEOU	Perceived ease of use
PU	Perceived usefulness
RMSEA	Root mean square error of approximation
SC	Strictly confirmatory
SCT	Social cognitive theory
SDM	Strategic decision maker
SEM	Structural equation modeling
SI	Social influence
SMC	Squared multiple correlations
SN	Subjective norms
SVE	Strategic value expectancy
TAM	Technology acceptance model
TAM2	Technology acceptance model 2
TLI	Tucker-Lewis coefficient Index
TPB	Theory of planned behavior
TRA	Theory of reasoned action
ULS	Unweighted least squares
UTAUT	Unified theory of acceptance and use of technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the research

Decision is defined as a reasoned choice among alternatives and specific commitment toward specific actions, usually referred to as involvement in resources (Oyawale & Adegboyega, 2008). Individuals and organizations make decisions and these decisions differ in their importance and effectiveness on the life of the person or the organization. Routine activities require routine decisions that often are made in a short time and usually require the same resources and processes.

Strategic decision (SD) is defined as a highly important organizational choice that affects the future performance of a firm, involves multiple units of the organization, requires a large commitment of resources, and necessitates consideration of many complex issues (Harrison & Pelletier, 1995, Wheeler, 2003). Consequently, knowing how strategic decisions are made by studying their processes is pivotal in management science. This is because making decision is the ultimate function of managers especially for strategic decision makers who need to know how to make quality decisions to achieve the business objectives of the organization. According to Mintzberg, Raisinghani and Theoret. (1976), a decision-making process is a set of actions and dynamic factors that begins with identification of reaction to stimulation and ends with specific commitment towards the actions. Accordingly, understanding decision making process is essential to determine how the organization can incorporate the advanced information technology applications such as decision support systems (DSS) to enhance its strategic decisions efficiency and quality.

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