Use of Information Systems for Credit Management Decisions in Banking Industry-An Empirical Study

By

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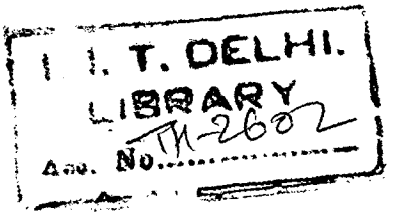
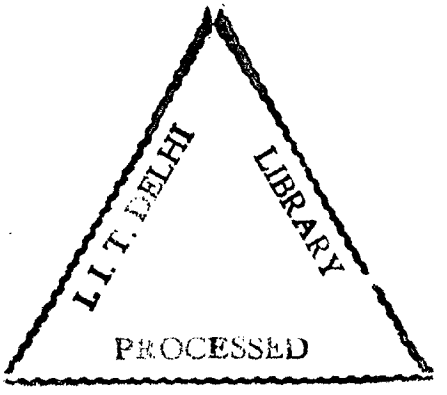
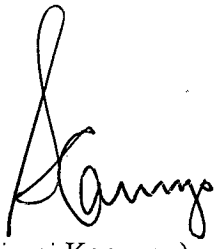




CERTIFICATE

The thesis entitled "**USE OF INFORMATION SYSTEMS FOR CREDIT MANAGEMENT DECISIONS IN BANKING INDUSTRY - AN EMPIRICAL STUDY**", being submitted by **SUSAN SHARMA** to the Indian Institute of Technology, Delhi, for the award of the degree of **DOCTOR OF PHILOSOPHY**, is a record of bona-fide research work carried out by her. She has worked under our guidance and supervision, and has fulfilled the requirements for the submission of this thesis which has attained the standard required for a Ph.D. degree of the Institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.



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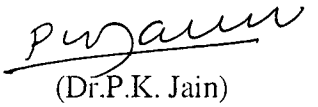

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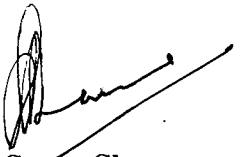
Last but not the least, this study would not have reached its logical conclusion but for the support and understanding received from my husband Shashi Kant Sharma and my children Sumit and Sushant.



Susan Sharma

ABSTRACT

This research represents a contribution to the enlarging interface between computer-based information systems and credit management techniques in commercial banks in India. Credit management in banks is an area which encompasses structured as well as semi-structured domains. These domains are ideal for using decision support systems (DSSs). The question that interested us was why are DSSs not widely used as yet in `credit departments'. In attempting to respond to that question, we have examined the views of practitioners on their perceptions of IS use and have looked for links between IS perceptions and decision making.

A quasi experiment conducted with practicing managers (as subjects) brought out facets of decision-making processes, which are related to hands-on use of a DSS. The prototype used in our experiment has a model-base consisting of a financial analysis module, `what-if' analysis and risk-rating module. The DSS was made using `Quattro Pro' with user friendly pull-down menu options. The objective of the experiment is to understand the effects of actual usage of the DSS on the people who work with it and through them on the business processes (credit decision) they are involved in. The experiment involved four groups of subjects two forming the control group and two the experimental group. The effect of applying stimulus on the experimental group is measured through self-assessment and third party assessment of solving a credit problem. Seven decision variables measured by us, namely, ability to search and incorporate all sources of data and information, ability to incorporate subjective information, completeness of analysis, cogency of arguments,

ability to incorporate decision concepts, rating of outcome and overall rating, assessed by the external examiner showed significant improvement on using the DSS.

Additional analysis done on results from the experimental group brought out a marked distinction between the logistics of perceived usefulness and actual use. Correlation analysis of use and usefulness variables revealed unexpected results. Those who believed that the system was more useful and that satisfaction levels increased on using the system did not really produce better outcomes while solving the problem. The results have more to do with actual hands on usage and less with beliefs and perceptions. The results suggest a need to distinguish between `self-efficacy' (an individual's self confidence in his or her ability to perform a behaviour) and actual usage.

Davis's Technology Acceptance Model (TAM) proposes that self-efficacy is a strong determinant of attitude toward usage. According to TAM, usage leads to usefulness. IS researchers consider `usefulness' as a variable indicating `effectiveness'. In our research, we would like to distinguish `usefulness' as perceived variable and `usage' and `effectiveness' as experienced variables. The TAM is theoretically sound in an organizational context. Our survey research on practitioners lent indirect support to this model. Our experiment suggests a different dimension to this theory at the individual user's level. When usage is mandatory, actual usage and not perceived usefulness, leads to effectiveness.

We also report five case studies on the evolving nature of use of IS in credit functions in major sectors of commercial banks. The IS community in commercial banks is

moving toward integrated technologies not only for branch computing but for their credit management processes too. IS has become an indispensable tool in credit management and its role is only becoming more crucial, as banks operate on thinner spreads in a competitive environment.

Conclusions from our survey and experiment highlight the conflict between the decision-maker and the implementer. Our studies provide a clear indication of the need to put in place efficient credit management processes on which a decision model can be embedded using a DSS. But decision-maker factors like speed, comfort and accountability do not correlate well with use of DSS. `Conservation of effort' which is a psychological requirement of the decision-maker, and culture of the organization will ultimately decide the extent of use.

CONTENTS

PART FOUR: DYNAMICS OF IS USAGE

Chapter IX

CONCLUDING OBSERVATIONS