Psychological Factors in Managing Innovation, Change and Technology Adoption in an Organization

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Abstract

Technology development is key to economic development and prosperity of an organization. Continuous innovation generates new options for business growth as it solves some existing problems and paves way for change in system. Psychological factors that drive such change have been discussed using Technology Adoption Model. Such change which staff perceives to have a negative impact on their development are resisted. Technology is enabler of a change. Involving officials and staff right from concept formulation, change process, change methods to change adoption ensures people involvement and success of a change process. An innovation may be involving several risk factors as well. A change management process must ensure risk mitigation for such new innovations and Technology enablement. While some top officials may trust new technology others may focus on risks that may have short term to long term impact on organization growth and development. Risk assessment, management and resolution of challenge are important factors behind success of change and implementation of innovation. Technology adoption involves funds, training, transparent processes and active involvement. The research work is an attempt to explore factors which influence change, innovation and technology adoption. The study is conducted on Cooperative organization where business processes have been passing through a tremendous change to render benefits to common masses dwelling in far flung remote areas. Year 2025 is being celebrated as International year of Cooperatives. The study is conducted using Primary research on officials and staff working in Cooperative institutions.

Keywords: Change, Innovation, Process, Risk Mitigation, Technology Adoption

I. Introduction

Innovation, change and technology adoption is inevitable for growth & expansion of any organization. Technology Adoption/Acceptance Model focuses on perceived usefulness and perceived ease of use. Psychological factors like job risk, unknown fear, extra work burden, inexperience, low skills, comfort zone etc. have to be examined to assess resistance for new technology adoption. The study investigates such factors which resists change, innovation and technology adoption. Methodology for risk mitigation, confidence building for innovative participation, technology enablement & productive change is also discussed.

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II. Psychological factors in technology adoption, innovation and change.

Innovation, change and technology adoption propels economic growth in an organization. While planning a change process several factors like economic aspects, market share and orientation are important considerations. Although Technology adoption and innovation are also dependent on various psychological factors which drive change process for an organization there has been a low consideration of these aspects. It has been opined by various researchers (Venkatesh & Davis, 1996), (Venkatesh & Bala, 2008) that technology adoption is resisted due to various psychological barriers. A delay in resolution of such barriers causes and is main reason for low scale or delayed technology change in the system. This requirement has driven an interest of researchers to focus on such system and study limitation factors of innovation, change anf adoption of new technologies (Bhimani et. al., 2022). Psychology barrier makes it difficult for decision makers to decide about the response, course of change and aftermath impact of changes proposed in system, processes and business expansion at large (Roberts et. al., 2021). Decision making being a key aspect which is motivated by positive and negative feedback plays a great role in managing changes. A fair choice regarding combating challenges, selecting a suitable option at particular instance and making a fair decision regarding adoption of a particular technology in real world situation and condition is becoming difficult (Kahneman & Tversky, 2013). Breaking legacy and adoption of a new technology is backed by need of solving some critical issues (Mcphetres et.al.,2021). A change that proposes quality, improves system effectiveness and builds efficient team for achieving long term goals is welcomed on individual performance front Goodhue et.al. (1995).

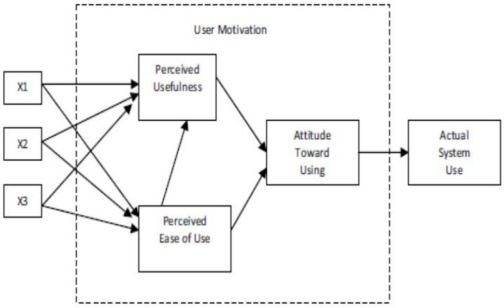
Ting et.al.(2020) and Cho et. al. (2020) argue particular attributes of a use case for a new technology. Any technology that is proposed to be a future but does not have any existing use case is not invited. Kwon & Silva (2020) indicate such systems to be resistible. Cooper (2019) research reveal that 70 to 90 percent of such systems are a failure and may involve a huge expenditure which may be as high as billions of dollars. On the contrary also if such technologies are not used in time and business lose customers due to lack of technology there are again losses (Makkonen et. al., 2019). This is a vicious circle where decision making is a key aspect. Malecka (2020) bats for modeling tool of rational choice for such situations. Performance and financial gains are key factors that drive such decisions (Stock et. al., 2015). Schneider and Sunyaev (2016) discussed the approach of risk oriented and trust based technology deployment.

Despite all systems in place and newer technology available for a systematic development, the roadmap for successful implementation is very challenging (Daneshy & Bahorich, 2005). Cooperative department proposes a turnaround with adoption of latest IT innovations. These innovative ideas are required for sustainability and making these institutions viable with limited resources. Initial studies pertaining to psychological aspects in innovation, technological adoption and change goes back to as early as five decades back. The initial model proposed involvement of decision making, skills, pursuance, adoption and fulfillment of the changes (Rogers, 2003). Davis et. al (1989) proposed technology acceptance/adoption model (TAM).

The model was further refined with combination of planning, behavioural change, control, risks and trust (Pavlou, 2003). Potential issues and their resolution could be categorized in pre and

post technology adoptions. Several modifications were made in the proposed model to incorporate reason, behaviour, social influence, social factors, trust & risk (Pavlou, 2003; Bagozzi, 2007).

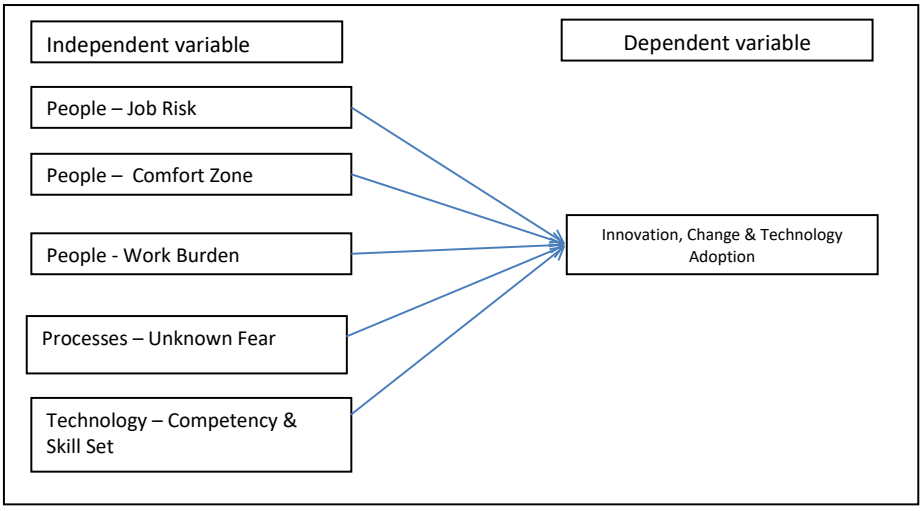
Figure 1: Technology Adoption Model



Source: Original Technology Acceptance Model, Davis (1986)

Cooperative sector has its IT system development in very nascent stage. Collection of field data and conversion of such data into information for decision making is a troublesome task. Several attempts have been made at divisional levels to put up a strong MIS. Being a fragmented approach there is low adoption of technology. Lacking aspects include solution to uncertainty, decision for sustainability and growth, leadership and education (Keengwe et. al., 2009).

Figure 2: Conceptual Model of Research



Source: Author research

III. Purpose & Objective of the research

1. To identify challenges in adoption of TAM model.
2. To assess people, process and technology issues in technology innovation and change.
3. To assess & address psychological factors causing resistance to change.
4. To address challenges by reengineering of processes, enabling people and innovative technology framework that is aligned with organization growth.
5. To formulate a holistic approach for technology adoption for innovative change.
6. Findings of above objectives help to assess approach for technology adoption, change and innovation.

IV. Hypothesis

1. Ho1: There are no significant relation between job risk & innovative technology acceptance.
2. Ho2: There is no significant relationship between comfort zone and innovative technology acceptance.
3. H03: There is no significant relationship between work burden and innovative technology acceptance.
4. Ho4: There is no significant relationship between unknown fear and innovative technology acceptance.
5. Ho5: There is no significant relationship between competency/skills skill set and innovative technology acceptance.

V. Selection basis & Research Methodology

The present year is being celebrated as UN International year of Cooperatives across the globe with theme of “Cooperatives build a better world”. The sector witnesses real time Innovation, Change and Technology Adoption in present context. The study is conducted on a cooperative organization having around 10,000 staff. Sample size is 300 staff. A quantitative analysis is conducted based on primary research responses which are collected using Google forms regarding following:

- challenge faced in on boarding new technologies, processes for innovative changes.
- perceptions of psychological factors for change (risk, fear, work burden, low skills, comfort zone etc.).
- people, processes & technology for active participation

VI. Results & Analysis

The results and findings are assessed based on descriptive statistics and Analysis of Variance (ANOVA).

Table 1: Descriptive Analysis

Job Risk (The new change or innovation cause job risk, I may lose my Job, New people will come, I will lose my seniority)	Percentage	Count	
Strongly Agree	39%	118	300
Agree	27%	82	
No Response	9%	28	
Disagree	15%	46	
Strongly Disagree	9%	26	
Comfort Zone [Getting adequate pay for work, Nothing will change if I work, Its not my job, This work was earlier done by Mr. X, Bro, Can You do it for me]			
Strongly Agree	27%	82	300
Agree	32%	97	
No Response	8%	25	
Disagree	19%	58	
Strongly Disagree	13%	38	
Work Burden (I will have to do double work, It will take time to learn, It will become hectic)			
Strongly Agree	41%	124	300
Agree	40%	119	
No Response	3%	10	
Disagree	8%	25	
Strongly Disagree	7%	22	
Unknown Fear (Something may go wrong, I will be held responsible, Systems can be tampered, Responsibility and accountability will be fixed)			
Strongly Agree	10%	29	300
Agree	20%	59	
No Response	30%	91	
Disagree	27%	81	
Strongly Disagree	13%	40	
Competency & Skill Set (Its costly to learn new things all times, I am not competent for new assignment, New techniques are complex for learning)			
Strongly Agree	8%	23	300
Agree	32%	95	
No Response	31%	92	
Disagree	15%	45	
Strongly Disagree	15%	45	

Table 1 indicates the descriptive statistics of the responses regarding adoption of technologies and changes for innovative growth.

Hypothesis 1 - Relation between job risk & innovative technology acceptance

Table 2: ANOVA Table - Relation between job risk & innovative technology acceptance

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit.*
Between Groups	20.74667	4	5.186667	35.36579	< 0.00001	2.37788
Within Groups	219.2533	1495	0.146658			
Total	240	1499				

The Table 2 illustrate that the *f*-ratio value is 35.36579. The *p*-value is < .00001.

The result is significant at $p < .05$.

Null Hypothesis rejected which indicates there are a significant relation between job risk & innovative technology acceptance.

Hypothesis 2 - Relationship between comfort zone and innovative technology acceptance

Table 3: ANOVA Table - Relationship between comfort zone and innovative technology acceptance

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	11.88667	4	2.971667	19.47559	<0.00001	2.37788
Within Groups	228.1133	1495	0.152584			
Total	240	1499				

The Table 3 illustrate that the *f*-ratio value is 19.47559. The *p*-value is < .00001.

The result is significant at $p < .05$.

Null Hypothesis rejected which indicates there is a significant relationship between comfort zone and innovative technology acceptance

Hypothesis 3 - Relationship between work burden and innovative technology acceptance.

Table 4: ANOVA Table - Relationship between work burden and innovative technology acceptance

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	42.48667	4	10.62167	80.39656	<0.0001	2.37788
Within Groups	197.5133	1495	0.132116			
Total	240	1499				

The Table 4 illustrate that the *f*-ratio value is 80.39656-. The *p*-value is < .00001.

The result is significant at $p < .05$.

Null Hypothesis rejected which indicates there is a significant relationship between work burden and innovative technology acceptance.

Hypothesis 4 - Relationship between unknown fear and innovative technology acceptance

Table 5: ANOVA Table - Relationship between unknown fear and innovative technology acceptance

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	9.213333	4	2.303333	14.92063	<0.0001	2.37788
Within Groups	230.7867	1495	0.154372			
Total	240	1499				

The Table 5 illustrate that the *f*-ratio value is 14.92063. The *p*-value is < .00001.

The result is significant at $p < .05$.

Null Hypothesis rejected which indicates there is a significant relationship between unknown fear and innovative technology acceptance.

Hypothesis 5 - Relationship between competency/skills skill set and innovative technology acceptance

Table 6: ANOVA Table - Relationship between competency/skills skill set and innovative technology acceptance

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	13.56	4	3.39	22.38143	<0.0001	2.37788
Within Groups	226.44	1495	0.151465			
Total	240	1499				

The Table 6 illustrate that the *f*-ratio value is 22.38143. The *p*-value is < .00001.

The result is significant at $p < .05$.

Null Hypothesis rejected which indicates there is a significant relationship between competency/skills skill set and innovative technology acceptance.

VII. Significance & Implications

Perceived usefulness and ease of use are not the only drivers for successful technology acceptance. Job risk perception needs to be addressed. Active participation of stakeholders is very important in successful technology acceptance. Business processes must be simplified for easy learning and seamless on boarding new techniques. This helps motivation and brings stakeholders participative out of comfort zone. New man force, Induction & skill set upgrade is to be integral part of any change management process to ease work burden. Motivation in form of incentive may be a booster for new system to eliminate unknown fear. Trust & Security comes with capacity building, skill set enhancement & act as a key to drive innovation, change and technology acceptance.

VIII. Conclusion

The detailed analysis of case study conducted on cooperative organization indicates that job risk, work burden, unknown fear, competency and comfort zone factors are critical aspects of technology adoption. While ease of technology, its usefulness is prime factor to initiate a change, stakeholder participation is also very important to ensure that the change is adopted in its true spirit. Build, operate and transfer policy of technology fails if any of the fulfillments is lacking. Technology Adoption Model has undergone several versions since its inception. Leadership role become very pertinent to execute a change with resolution of issues like

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