

Managing Software Adoption by Employees -A Study Specific to IT Company in Bangalore

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Abstract: Every day, organization across the globe purchase new software/ digital platform that promises more speed, improved performance, increased output, cost savings and general betterness. For CIO's and CXO's these new technologies/software are introduced with great expectations that often go unfulfilled. That's because 75%*of new platform/software implementations fail and the biggest reason is employees simply don't understand its benefits & usage and results in low adoption. This study is confined to employees adoption on new software related to product lifecycle management (product conceptualization, design, develop and go to market for mass production and distributions). In this study researcher tried to gauge the adoption level of users on the digital platform/new software being used for product design & development (PLM software). It's well established fact that success of any new software depends on not only on the power of its functionalities, features and benefits but on how the users understood the benefits, its usage and get adopted to achieve the intended objectives of higher productivity. In any transformation journey, its known fact that employees are critical determinant to ensure the success of any new software/digital platform implementation. Poor engagement of employees results in a slower speed of adoption, lower ultimate utilization and impact overall value of the investment. If an organization focus more on managing human aspect of change can help employees get engaged during the early cycle of change & adoption process and ultimately helps in reducing the learning curve and improve the benefits to each and every employee. Employee's engagement is core to effective adoption. Any adoption initiative needs well planned and contextual framework to ensure engagement of employees proactively in early stage of implementation cycle to ensure adoption. In any new software/platform implementation adoption also depends on education to critical mass on product benefits, what's in it for me (WIIFM), design thinking, ease of usage, top management buy-in and commitments, performance support and how employees are motivated and sustain the momentum. Any employee's adoption on new software requires 2 fold approach: 1) assess and identify employees' adoption risks and mitigation proactively through various pertinent change management interventions 2) involvement of employees/users through design thinking and continuous education to impacted stakeholders (leaders, managers, platform champions/catalyst) about projects progress, milestones, benefits, expectations, performance support and regular feedback on platform usage and improvement. Our study indicates culture of organization, attitude, norms and perception of employees, immersive learning plays pivotal role in early and effective adoption. A structured change and adoption management framework on gauging employees' readiness, design thinking, risks identification & mitigation and putting contextual interventions on real time basis reduce learning cycle and ensure effective adoption of employees to new ways of working.

Keywords: Adoption readiness, software rollout, digital platform, Human aspects of change, contextual, organization change management, VUCA

Enterprises that fail to prepare and support their workforces for major and continuing organizational change will miss business objectives by at least 30% and will experience turnover rates of at least 20% annually for their key knowledge and leadership workers".
Source: – Gartner Consulting

I. Introduction

The world is at the beginning of a **digital revolution**. Anything and everything that can go digital is going digital at an **exponential** rate. Digitalization is impacting the life of each and every individual and driving fast human progress. The power of data, connectivity, computing, software and information together making changes in the lives drastically. Today every body's life is defined as "The Digital Life", success of digitalization depends on how it being consumed or adopted. The major challenges today every organization is facing how to maximise the usage of digital platform and harvest maximum value and improve top and bottom line of organization's productivity.

In many organizational new software/ digital platform rollout have failed to deliver promises and a very common theme among these failures is lack of understanding of the “power of the collective human system” & “culture” -attitudes, values, beliefs, habits, skills and norms.. This resulted in wastage of time, money and losing market share and competitive advantage. In toto failure of technology adoption due to user’s adoption means that business strategies are not accomplished; resistance to change increases and the organization’s survival is threatened.

II. Review Of Literature

As it a famous says “some people change when they see the light, others change when they feel the heat” today in the fast changing world nothing is permanent except change and it doesn’t make us wonder why it is so difficult to bring about change in organizations? Furthermore, would it be somehow possible to help organization to optimize their operations, reorganize them and adopt new systems and ways of working? Today in the VUCA (volatility, uncertainty, complexity and ambiguity) world where we are talking of technology disruptions- be it machine learning, artificial intelligence, virtual reality, internet of things, robots, 3D printing are impacting every individuals and every organization and adoption to the change is becoming way of life.

In past several decades, many studies have been made to explain, predict and increase user acceptance of information systems-new software/digital platform at work based on different theoretical approaches and models. For example, the Innovations Diffusion theory (IDT) suggests that the user’s perception of the characteristics of an innovation affect adoption (e.g. Moore and Benbasat 1991, Plouff et al, 2001, Rogers 1995). The intention-based theories of IT adoption, i.e. the Technology Acceptance Model (TAM), (e.g. Davis et al. 1989, Venkatesh and Davis 1996, 2000), and the Theory of Planned Behaviour (TPB), (e.g. Mathieson 1991, Taylor and Todd 1995a, Venkatesh and Brown 2001) have shown that user adoption and usage of an IT innovation/digital platform is ultimately determined by his/her beliefs and attitudes. There are also other theories, e.g. Social Cognitive Theory (SCT) (Compeau and Higgins 1995a, 1995b, 1999) and Triandis’ model (e.g. Thompson et al 1991, 1994, Cheung et al 2000) that have been applied to user adoption of Information system/ digital platform studies. These studies have produced useful insights into the cognitive, emotion, affective and behavioral reactions of individuals to technology, and into the external variables that influence the formation of these reactions or even directly influence the user’s intention or behavior.

These days, information technology/digital platform is universally regarded as an essential tool in enhancing the competitiveness of the organization and economy of a country. It is commonly accepted today that usage of IT/digital platform has significant effects on the productivity of organization. These effects will only be fully realized if, and when, IT/digital platform are widely spread and used. It is crucial, therefore, to understand the determinants of IT/digital platform adoption and the theoretical models that have arisen addressing IT/digital platform adoption by users. In this we will review the available research or literature.

We review theories for adoption models at the organization level used in IT/digital platform. Interaction between humans and technology is influenced by a number of social and psychological factors and characteristics (Taiwo&Downe, 2013). Because of the complexities involved in predicting human behaviour, research has generated a variety of theories and models to explain patterns of adoption and use of new technologies/digital platform. Technology acceptance research is a mature field and has now been active for two decades as technology has invaded every domain of life. Several theoretical models have been developed to explain the acceptance behaviour of end users. Therefore, the study of technological innovation acceptance requires psychological models and theories to explain and rationalize whether users benefit from new software/platform. Several technology acceptance models have been developed, and they have their own specific characteristics and importance. The theory of reasoned action was introduced by Ajzen and Fishbein first in 1975 and later in 1980 (Ajzen&Fishbein, 1980; Davis et al., 1989; Fishbein&Ajzen, 1975) within which the individual’s attitude towards a given situation combines with subjective norms to shape the behaviour intention, which in turn influences the individual’s actual behaviour. It has acted as a starting point for technology acceptance models (Davis et al., 1989). It links the perception, norms, and attitudes to the intentions of a person in making a decision, and from there predicts the behaviour which may result as a consequence of this intention. It has been criticised, however, because it does not consider the individual’s ability to control (Yusuf & Derus, 2013).

The social cognitive theory (SCT) was developed by Albert Bandura in 1986. It theories that learning occurs in a social context with a dynamic and reciprocal interaction of the personal factors, environmental factors, and behaviors (Bandura, 1986). It posits that users acquire and maintain behaviour while considering the social environment in which they develop the behaviour .It gives prominence to the concept of self-efficacy (Compeau et al., 1999). Fred Davis developed the TAM (Technology acceptance model) first in 1986 in his doctoral study. The TAM originated as an adaptation of the more generalized TRA (Theory of reasoned Action) and was developed more specifically later to predict and explain technology usage behaviour and it was developed to identify the factors which lead to user’s acceptance or rejection a technology by integrating

technological aspects with organizational behaviour concepts (Davis et al., 1989; Davis, 1989). Two important factors are perceived usefulness and perceived ease of use. Shroff et al. (2011) reported that by manipulating these two determinants, system developers can have better control over users' beliefs about the system and so can predict their behavioural intention and actual usage of the system. Attitude towards using a new system has been classified as a determinant that guides future behaviour or as a cause of intention which eventually leads to certain behaviour. In TAM, attitude towards using a system refers to the evaluative effect of positive or negative feelings of individuals in performing a certain behaviour (Shroff et al., 2011). The TAM was further modified by Venkatesh & Bala (2008) to give a higher level of significance to 'perceived ease of use'. They also added the dimensions of computer self-efficacy, perception of external control, computer anxiety and computer playfulness. Two adjustment variables have also been added, which are perceived enjoyment and objective usability. According to this model, the perceived ease of use is determined by computer self-efficacy, computer playfulness, computer anxiety, perception of external control, perceived enjoyment and objective usability. The perceived usefulness is determined by subjective norms, job relevance, result demonstrability and image. However, one of the criticisms of the model is that there are too many variables and too many relationships between the variables.

In one of the study on factors impacting value realization from technology (TSIA/Neo change/Sand Hill Group) –Process alignment factor is impacting 6%, organization change management 7%, features and functionalities by 18% but effective users adoption was highest and it is 69%. Effective usage of the platform/software is the determinate factor to define the success or failure of any software or platform implementation and usage.

The motivation model has been applied by Davis et al. to study ICT (information computer and technology) adoption and use (1992). It posits that the individual's behaviour is based on intrinsic and extrinsic motivation. Intrinsic motivation arises from a person's inner drive to perform the task and relates to perceptions of pleasure and satisfaction (Davis et al., 1992; Vallerand, 1997). On the other hand, extrinsic motivation arises when the cause of motivation is outside the person or outside the task (Cheng & Yeh, 2009). In this model intrinsic motivation (Davis et al., 1992; Venkatesh 2000) and perceived usefulness, perceived ease of use, and subjective norm are determinants of extrinsic motivation. This model is based on the psychological aspects of technology acceptance. Other model is innovation diffusion theory: developed by Rogers in 1995 (Rogers, 1995). Innovation is an idea, process, object, or practice that can be considered to be new, and diffusion is the process by which it gets into the social system (Rogers, 1995). This theory is considered to be the permanent theory of acceptance of innovation and is appropriate in both an individual or organizational context (Yusuf & Derus, 2013). In this theory, there are five determinants of the rate of innovation that affect adoption and acceptance behavior. They are relative advantage, compatibility, complexity, trialability, and observability.

The extension of the unified theory of acceptance and use of technology has been developed by Venkatesh et al. (2012) to pay particular attention to the consumer use context. This model included the independent variables of UTAUT (Unified theory of acceptance and use of technology) but added three more which are hedonic motivation, price value and habit. They have integrated these three independent variables into UTAUT in order to tailor it to the consumer technology use context. Moreover, by combining these three salient constructs into UTAUT, Venkatesh et al. expand the overall framework with regard to technology use. This theory includes age, gender and experience as moderating variables; however, voluntariness has been ignored.

Kotter's phase model originally introduced in Harvard Business Review and later also published as a book (Kotter 1995 and 1996). Before Kotter's change management literature has traditionally focused on identifying sources of opposition to change and offering means and methods to overcome them (Cummings and Worley 1993, 144). Although change management seems to put more emphasis on strategic issues, on competitive advantage, and on customer focus, OD and change management comprise change management (Adapted from Cummings and Worley 1993, 145). Cummings and Worley's model contains planning, the steps towards new, attractive vision and objectives. It also pays attention to motivating people and identifying key players of the change. Nor does it forget to ensure sufficient top management support, to provide adequate resources for change and to build up reinforcing organizational structures.

In conclusion, model suggested by Kotter on change management to enhance the adoption level is critical and widely used by the SME's & practitioner. Similarly innovation diffusion theory developed by Roger is considered to be the permanent theory of acceptance of innovation and is appropriate in both an individual or organizational context (Yusuf & Derus, 2013). Technology acceptance model propagated by Venkatesh and Bala (2008) is significant and explain well users behaviours and succeed in providing a robust model which is broadly applicable in technology acceptance by users.

HYPOTHESIS

Hypothesis - 1: Success of new software adoption depends on ease of use and continuous education to employees/users on its benefits

Hypothesis -2: Success of new software adoption has direct relation to culture (attitudes, values, beliefs, habits, skills and norms) and context

Hypothesis -3: A structured approach and framework to change & adoption management ensure effective adoption to new ways of working

III. Methodology

Data collection and sample characteristics

The primary and secondary sources were used for information and data collection and been analyzed. In this research process empirical data were collected direct from the impacted stakeholder (Business leaders, managers, employees/users). A set of questionnaire were designed, piloted with small group and later administered to bigger population/stakeholders across the organization. Objective of study-1) assess and understand users reception to new software/digital platform adoption 2) Identify proactively risks and mitigate during the roll out and provide performance support to employees/users. While administering questionnaire, objective was to seek the opinion, perceptions, experience on new software, identify employees concerns & issues through structured and unstructured interaction/tool. Stratified random sampling technique were considered to maintain the objectivity of the study. Data were collected from various departments of organization in Bangalore. Researcher administered this set of questionnaire to 1000 participants and received 300 feedback. Researchers also had face to face and focused group interviews with critical mass. As part of research design process various other secondary sources were used like articles, internet, books and research reports and websites for further reference.

MEASURES

The purpose of this study was to assess and understand employees/users reception to new software adoption (Product life cycle management) and identify risks and mitigate by various identified interventions-education, communication on benefits, usage, psychological connect, performance support etc. The overall purpose was to maximize value of software by ensuing effective usage and adoption by users. In the research design of this study, lots of attention were paid towards measuring relevant constructs in a reliable way. The questionnaire were divided in 2 sections Section 1: 19 multiple choice questions measured on five-point Likert scale ranging from 'strongly agree' to 'strongly disagree'. Section 2 having 6 descriptive questions. Questionnaire were designed around 5 dimensions: 1) Organization culture 2) Change strategy and leadership buy-in 3) education on software usage & WIIFM (what's in it for me) 4) software/Platform performance support and adoption and 5) Employees experience on PLM software During the research process below were considered for analysis and interpretation of collected data: Score between 1-2: High concern, 2-4: Medium concern, 4-5: good adoption: ≤ 3.5 – Medium to High concern items and is alarming and need attention to mitigate and increase the acceptance and adoption.

ANALYSES

In order to test the hypotheses presented before, regression analyses with standardized variables entered into the regression were used. The first hypothesis tested by regressing ease of using of software by gauging perception and experience of employees. 5 dimensions were considered for gauging employee's adoption. Hypotheses 2 were tested using regression analyses with respect to the hard and soft effectiveness criterion as dependent variables and context and adoption criteria as an independent variable. Outcome of the same were used to strengthen the framework. Next to the regression and standard deviation, the correlations between constructs were also investigated to assess the strength of found relationships. Hypothesis 2 & 3 validated and found relevant and helped a lot in plugging gaps to improve usage of PLM software to ensure adoption.

IV. Results

As the objective of study was empirical, some exploratory analysis were executed to find out how users adoption framework or model changes with different objectives and purpose - managing users adoption during software adoption, new business process adoption, digital transformation (e-governance etc.). Employee's involvement and immersive engagement is critical and needs to plug right in the beginning of roll out. Employee's pains and expectations (designing thinking) needs to be addressed throughout implementation cycle. Also the role of business leaders and managers as catalyst/champions to motivate & support employees during the transition (enforcement and commitment for change). Agility in rollout, employee's engagement and education helps a lot in reducing employees/users learning curve. Overall employee's adoption on PLM software was 3.83 out of 5- falling in the range between medium to low adoption concerns. Highest scores 4.2 were on

change strategy and leadership buy in and support, which articulate the culture of organisations receptive and pro to change past history). The lowest score 3.3 was on training and adoption, were quite alarming and largely impact users learning cycle. The data were benchmarked with the best industry practice and any scores 4-5 are considered good. In the present finding, average scored were 3.83 and found relatively good. This score is low as the adoption of the PLM software were confined and limited to handful users and not to the greater population and needed structured approach to mitigate by ensuring active involvement and enforcement of business leaders and managers as well as users on continues basis.

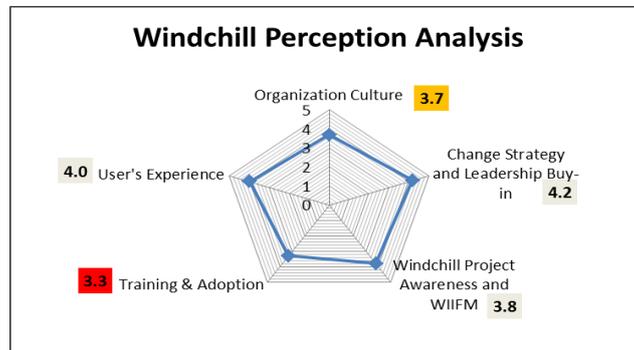
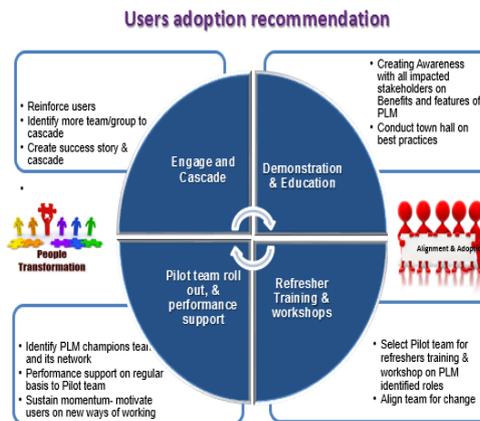


Diagram 1

Score on the individual dimensions on project education and benefits awareness and employee's perception on platform/software, performance support indicated as area of improvement to ensure the success. PLM champions/catalyst need to educate employees on workload concepts (needs to demystify increase workload by user's education and smart way of doing, continuous performance support to users (hyper support, in-pod support, eLearning performance videos etc.) to enhance engagement and adoption.



Picture 1

As shown in the picture 1, revised training & adoption approach & plan is needed to enforce PLM software by leveraging managers & champion's involvement. Also PLM academy can start learning and performance support program on regular basis to sustain the momentum. Leadership reinforcement & commitment, rebranding, creating quick wins celebration were some other interventions suggested to reinforce adoption. Other indirect variables which influenced were education on benefits, address issues and concerns of users on real time basis, continuous communication to all impacted stakeholders about progress, smart way of doing, role efficacy, benefits and right expectation setc.

V. Discussion And Conclusion

The objective of this study was to assess & understand users reception to PLM software adoption based on its benefits and ease of usage and its relationship with variables like culture, attitudes, values, beliefs, habits, emotions and norms of employee's. Also how soft variable have direct relation and impact on effectiveness of employees adoption and how structured approach & framework proactively engages employees and other impacted stakeholders in improvising PLM software usage and adoption and add to productivity improvement. During the study we also examine how employee's engagement in the early stage (design thinking and education) ensure better usage, commitment and productivity. In present study we also analyses the various

existing theories, model and framework of managing employees adoption on new software and potentials avenues for further fruitful research.

The study findings emphasized on role of champions/catalyst and performance support as critical determinants ensuring the success. Below the major conclusions drawn from the study are discussed and some scope for further research are depicted. The first objective of study were to assess and understand critical success factor to effective user's adoption and its relationship with the culture (attitudes, values, beliefs, habits, skills & norms). It is found that culture of retail organization is positive and progressive but need effective involvement and engagement of managers & employees in the next phase rollout. Active commitment and enforcement of leader's determines the success of next phase of adoption. Employee's need to get engaged in the early cycle of rollout and a structured and planned change & user's adoption management framework would be an insurance to users adoption. Gauging employees readiness, identify risks proactively and mitigation through planned interventions helps organization manage change & ensure better adoption. A structured approach of Plan-> Lead->Sustain will ensure the success and can help in leveraging the potential usage and benefits of the PLM software and help in maximizing productivity and market share.

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