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Participants - Time, Visits and Cost (P-TVC) Model of Information System to Compute User Satisfaction

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Abstract:

User gratification or satisfaction is the key to any information system. Response or feedback is able to evaluate user gratification level of information system management. Great level of user gratification or acceptance indicates the higher success of any information system. Again, user satisfaction or acceptance level can help management to upgrade service time to time. Participants is a very crucial factor of success of any information system. In this paper, we introduced a P-TVC (participants, time, cost, and visits) model to calculate user satisfaction level automatically. Participants has been newly introduced to update TVC model. This P-TVC model can also help the management whether the service is an innovation or not. Moreover we have concluded by a hypothesis this TVC model to user satisfaction/ acceptance.

Keywords—**P-TVC, user satisfaction, time, visits, cost.**

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I. Introduction

Understanding in officialdoms, in Information Technology (IT) has mostly attentive on application segment of IT novelty. Formerly from opening of IT application advance IT recognition was used. In IT novelty, for refining structural handlers simple experiments are expending to change separate conduct. Likewise, as a achievement in IT novelty when associates' of managerial has putative and using IT originality then the bunch of innovation gets welfares [1]. Academics stated that, round of academic mourned the rarer care to IT submission part, sighted that if we have coordinated with IT receipt stage of IT originality. In qualitative studies approach used IT operation. Similarly we be able to approximately that the core drive of combined hitches are not only IT novelty tragedy but likewise mostly for IT operation failure. For important certain battle by organizational affiliates, we can practice healthy technique of IT that is creativities in certain officialdoms. The battle may occur at organizational, collection and separate level. For handling and enlightening the IT innovation procedure, truly sensitive of IT application battle can assistance organizations, besides, discovery customs to reasonable them. Foremost important of an organizational achievement is frequently study as a creative. We can understand from investigators that calculating the operation of efficiency has completed in IT innovation [2][3]. All these trials are verified the joint innovation competence in industries, business and organizational situations before IT operation studies. Achievement of IT novelty has recognized as a serious ways. Usually, organizations might upsurge, adapt, accept and implement the innovations. IT innovation is a key of varying effort in surroundings of an organization. We can understand that several organizations cannot be following to appreciate the projected welfares of IT innovations that can be applied. Through outgrowth of application, lacking in IT application ladders is that numerous organizations place of a scarce accepted IT innovations. Also, the organizations will not improvement credible proceeds of

prosperous ability novelty, break of working schemes and bad effects on commercial image and injury of honesty.

From certain lessons we can understand that application of innovations effort on IT implementation in progressive in each condition in emerging countries. The key aim of this study is to develop a theoretic user satisfaction model (P-TVC Model) of Information System Management in any organization. In straight and circuitously the highest management of the organization will be reinforced by this study and brand choice to promotion the scheme or services. For fruitful efficacy of IT implementation, it must be included in the given study model. We prepared literature review, P-TVC model, and conclusion in section II, III and IV respectively.

II. **Literature Review**

We have considered certain surviving user satisfaction model of information system management. Certain of the study is pronounced blew:

A. *Innovation Implementation*

Earlier mechanisms showed that scientist planned their personal clarification about an innovation. In [5] writer prompt innovation as a idea, habitude or material which familiar as modern by the public. Typically extras tress is agreed on habitude or technology. Writers in [1][4] express innovation as a habitude or technology which an organization may present for the principal period or previously using them. In this investigation, knowledge of IT (IT) upgrading might be offer the kind of IT upgrading that an organization famine to custom and indorse IT transformation. Then, an organization which use IT upgrading will be helped and achieve motivated supremacy.

B. *Klein, Conn and Sorra's Model*

Researchers of [1] and [2] stress in what way innovation can be applied in the organization. Author of [1] described an actual system in this work. Researchers have presented operation framework based on the earlier research works. This framework based on dissimilar categories of institutional innovation recital expose to operation presentation. This model similarly strictly depends on high authorized management care, economic care, guidelines, habitude and environment. The planned [1] model was verified on 39 official circumstance from 33 building businesses in USA.

C. *Innovation Implementation Model, Sawang*

Afterward six years the model planned in [1], several scholars effort on to improve the model. Writer in [3] projected an lengthy model founded on two issues commercial and human resource. Actual agenda was only emphasis on commercial skill. Furthermore, the author likewise enhances an extra matric named inward innovation taking method. Author of [3] verified the application presentation model on Thailand and Australian portion. The result of the examination disclose that, planned model achieves healthy in terms of effectiveness and accuracy. Studies of implementation displays that, accessibility of human and commercial basis regulator application presentation. Furthermore, human skill is one of the main issues in operational period.

D. *Mesurement Model of IT Implementation*

In the study of [6], writers tried to express a model of eccentric dimension of IT implementation effectiveness on the basis of two theoretic form of innovation presentation. Containing of five concepts or variables in the remaining measurement model which has joining amongst of them. In straight and indirectly linking, the core key of measurements in this study work [6] is scheming the linking amongst the top management shore up and IT implementation efficiency. Also, secondary connection between inexpensive resources convenience and IT execution efficacy should be designed in the imperceptible model.

Writers of [6] used a operational procedure and association in the mid of variables. The knowledge and sense of variables is described next. Financial Resource Availability (FRA) demonstrate the administrations that can deliver high superiority and deliberately obtainable computer software and hardware, technical instruction,

user sustenance services, trial with new technology as well as practicing for large economic costs. Top Management Support (TMS) displays the organizations that can deliver great advantage and intentionally existing computer accessories, technical instruction, user sustenance services, trial with new technology and practicing for huge economic costs. The rules of Application and applies displays the strategy what can care IT innovation implementation similar associate program, communication, instruction. Training for staffs to use the innovation such as we can say about the excellence and quantity of obtainable training. The technical assistance condition to innovation operators depends on essential foundation, the obtainable plunders like honor, upgrades for IT innovation apply. In the organization Implementation Climate (IC) shows the users' significant awareness of IT innovation implementation. By of an accepted IT innovation in IT Implementation Efficiency (ITME) displays the worth and dependability of the affiliates of organization.

E. TVC Model

TVC (time, number of visits, and cost)[7] is not only a significant factor of any organization, but also selfsame active of customer's gratification dimension. It is very operative to resident facilities of any national too. TVC trials time, number of visits and cost desired for any facilities. If we relate TVC before and after application of information system for some services, we can relate the efficacy or gratification of clients. Let an instance to deliberate efficacy or gratification of a resident who needs birth registration and acquire certificate of his kid in Bangladesh. After applying the information system (online), the organization must save TVC matrices for all resident and compare after implementing and before implementing the service online and if seems that TVC is higher than threshold, then management will recognize the bad feedback of citizen and desires to study the rules and application issues of the services. Else organization will recognize that customers or citizens are giving optimistic response and pleased to the scheme or facilities. To evaluate this factors, authors of [] use several example and feedback model. Authors also suggest some conditional factors to upgrade the system or implementation factors time to time. But for successfully implementation of any service or system, number of consumers or customers is primary factor. If participants or customer is very less, then any system or service will not viable. So authors of this study miss to add this factor(number of participants) and we have tried to add this factor and propose a new model named "P-TVC" model.

III. P-TVC Model

Fig. 1 displays planned model for observing customer satisfaction. We have added a new feedback technique through TVC model [7]. In this model, we introduced feedback method with a new factor as "Participants".
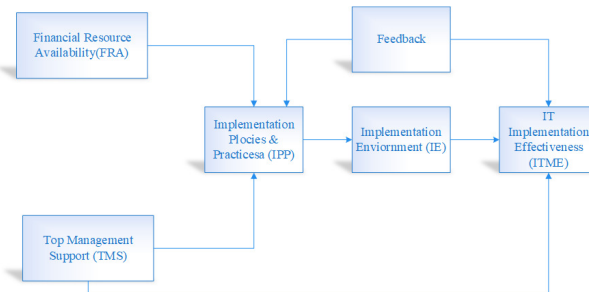

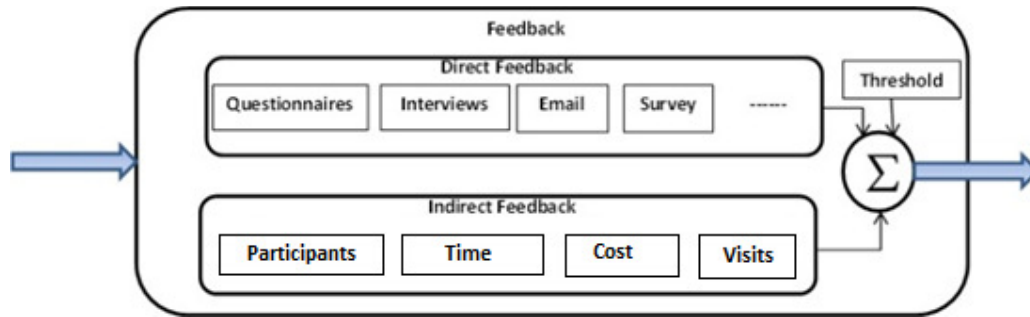Figure1. Updated Measurement Model of IT Implementation

Figure 2. P-TVC Model

Information system will acquire feedback from ITME and relate certain procedure to confirm user satisfaction. After decisive the satisfaction level of users, it will send to IPP to take essential achievement. We have presented two feedback technique i,e, direct and indirect feedback. Direct feedback is as old-style system. We have include number of participants, time, number visits and cost matrices in indirect feedback. These four matrices is so valuable to regulate user gratification level for the information system and no needed user communication directly. So we present it as P-TVC model. Particulars of the method of planned model is described following:

Fig. 2 displays several feedbacks with P-TVC model. Receiving info from client or citizen or participants of the system around efficiency of the system is called as user feedback. Examining user feedback, authority can take valued decision to advance the enactment of the system. It can be negative, positive, Informal or formal feedback. If participants or customers pleased to the system, they typically spring positive feedback about the system. If they are not pleased, they can stretch negative feedback. Customers or participants or users feedback assists authority upgrading the system, recover customer satisfaction, pay care to customers, greatest customer participation, increases customer relations, notify to further customer and general business evolution. Customer or user feedback can assists business in numerous habits such as, reworking proportion optimization, client / consumers concerned with product, spread database etc. Customer feedback can leading to an advanced product or service.

In planned work, we described two types of user feedback.

a)   Direct feedback

b)   Indirect feedback

(a) Direct feedback: Direct feedback is directly linked to clients. Direct feedback can be calm in many ways such as questionnaires, meetings, email, surveys, phone calls, remark, social media or printed forms. This method is old-style procedure. Consumers or clients are directly connected to these approaches. It desires vast time and cost to gather information.

(b) Indirect Feedback: Consumers or clients will not directly connect to this form of feedback. This is an unconscious procedure. Board of the company or organizations will get significant information by this feedback deprived of any charge or time. Fig. 2 displays the procedure of indirect feedback. Four parameters number of Participants, Time, number of Visits, and amount of Cost (P-TVC) involve in this method. We have called this as P-TVC model which has been described in four steps blew:

Step 1: Authority has to save histories around customer visits to the services, number of them, time period for appointments and dispensation of services, and cost to visits to process and others before installing the system. If the organization has no historiesc on cerning these (participants, time, visits, and cost), then management must create a tentative record that one customer necessities TVC to achieve one service and increase number of participants by one. Formerly management will develop a database P-TVC for every service. We called it Pre PTVC database.

Step 2: Authority will preserve attentive eye after placement of the system in online. Management has to save records how much participants enjoining services over online. Management should form a typical threshold to deliver services over online. Keep record of P-TVC save the carried services of the client.

Step 3: Compare Post PTVC with Pre PTVC. If these judgment displays less than the threshold value, management will understand positive feedback i,e, information system is acting fine and customers are pleased around services delivery of the organization. If the judgment shows higher than threshold, then authority will assume negative feedback i,e, clients are not pleased to the service provision of the organization and desirable to upgrade the service distribution system.

Step 4: Examine all records from direct feedback from users and consider into deliberation. Also consider indirect feedback form Step 3 and pool these two feedbacks and apprise the system as necessary.

A. Mathematical Model

Let earlier applying the information system (online).

$$PTVC_{Before} = \alpha \times T_B + \beta \times V_B + \gamma \times C_B + \delta \times P_B \quad (1)$$

$$\text{Where, } T_B = \sum_{i=1}^{m} T_i, \ V_B = \sum_{i=1}^{n} V_i \text{ and } C_B = \sum_{i=1}^{0} C_i$$

Earlier applying information system (online), T_B means time, T_i is time required to complete a part of specific service. V_B means visits, V_i is number of visits required to complete a part of specific service, C_B reflects total cost, C_i is the cost required to complete a part of specific service, P_B is the number of participants. α, β, γ and δ are regulating elements and these four factors will be fixed conferring to significance of exact matrices. For example, if cost is very significant compare to time, then γ has to fixed higher value compare to α.

After implementing the information system (online),

$$PTVC_{After} = \alpha \times T_A + \beta \times V_A + \gamma \times C_A + \delta \times P_A \quad (2)$$

$$\text{Where, } T_A = \sum_{i=1}^{m} T_i, \ V_A = \sum_{i=1}^{n} V_i \text{ and } C_A = \sum_{i=1}^{0} C_i$$

After applying information system (online), T_A is entire time, T_i is time required to do a slice of the package. V_A is total number of visits, V_i is number of visit required to do a slice of the package, and C_A is total cost, C_i is cost required to do a slice of the package and P_A is the number of participants. α, β, γ and δ are regulating elements and these four factors will be fixed conferring to significance of exact matrices. For example, if cost is very significant compare to time, then γ has to fixed higher value compare to α.

Threshold of the system (online),

$$PTVC_{Th} = \alpha \times T_T + \beta \times V_T + \gamma \times C_T + \delta \times P_T \quad (3)$$

$$\text{Where, } T_T = \sum_{i=1}^{m} T_i, \ V_T = \sum_{i=1}^{n} V_i \text{ and } C_T = \sum_{i=1}^{0} C_i$$

Goal to realize achievement of information system, T_T is entire time, T_i is time required to do a slice of the package. V_T is total number of visits, V_i is number of visit required to do a slice of the package, and C_T is total cost, C_i is cost required to do a slice of the package and P_T is the number of participants. $\boldsymbol{\alpha}$, β, γ and δ are regulating elements and these four factors will be fixed conferring to significance of exact matrices. For example, if cost is very significant compare to time, then γ has to fixed higher value compare to $\boldsymbol{\alpha}$.

Now, later applying the system or services, organization will save record (all PTVC). Calculate average value of $PTVC_{After}$. If average $TVC_{After} \leq TVC_{Th}$ then organizationaccept positive feedback of users. Likewiseacceptclienteles are glad with the system and average saving value $=TVC_{Before}$ - TVC_{After}. Else,organizationaccept negative feedback of users. Also assume clienteles are not joyful with the system and upgradation of information system is required. Average upgradation value needs $=TVC_{After}$ - TVC_{Th}.

B. Algorithm

1. Set $PTVC_{Before}$, $PTVC_{After}$ and $PTVC_{Th}$ as equation 1, 2 and 3 respectively.
2. If $PTVC_{After} \leq PTVC_{Th}$ then
   a. Undertake positive feedback of customers. Customers are joyful.
   b. Success level = $PTVC_{Before}$ - $PTVC_{After}$
3. Else
   a. Undertake negative feedback from the customers. Customers are not joyful to the service and need to update information system (online)
   b. Needed update level = $PTVC_{After}$ - $PTVC_{Th}$
4. End

IV. Conclusion

We have introduced a PTVC model in are laxed mode. Proposed model can be implemented to fix any new services are innovation or not. Over, this model can help the business to evaluate user receipt or gratification *level* of any services. Organization can take required act to promotion the services according to the user satisfaction level. Organization also can update threshold satisfaction level time to time to give better service to customers.

V. References

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