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GTTA3: An Extension of the General Theory of Technology Adoption

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ABSTRACT

The value perspective to technology adoption has many advantages. They include identifying user benefits beyond perceived usefulness and perceived enjoyment and user costs beyond effort expectancy (inverse of ease of use). However, although traditionally benefits and sacrifices (costs) are considered to be the two dimensions of value, we suggest that a third dimension of user needs is missing in these conceptualizations. The value perception of users depends not only on the benefits provided versus costs incurred but also on the needs profile of the users. This tripartite conceptual of value is useful in providing deeper insights into technology adoption.

Keywords: Technology Adoption, Psychological Needs, Behavioral Intention

INTRODUCTION

Kakar and Kakar (2017a) proposed a new approach to technology adoption. They suggested that that the behavioral intention (BI) to purchase, choose or use a new technology is determined by the perceived value of the technology to the user. This conceptualization helps extend technology beyond the Behavioral Intention (BI) of users to use the system to consumer choice of technology and purchase intention. Further, the value perspective in their proposed theory of GTTA (General Theory of Technology Adoption) helps identify additional constructs such as user benefits beyond perceived usefulness and perceived enjoyment and user costs beyond effort expectancy (inverse of ease of use) used in the Technology Acceptance Model (TAM)– see Table 1. This conception of user value was tested later by Kakar and Kakar (2017b), Kakar (2017c), Kakar and Kakar (2018b) and Kakar (2018c).

TAM	**GTTA**
BENEFITS	
Perceived Usefulness (PU)	Utilitarian Benefits (UB)
Perceived Enjoyment (PE)	Hedonic Benefits IHB)
-	Social Benefits (SB)
COSTS	
Ease of Use (PEOU)	Effort Expectancy (EE)
-	Financial Costs (FC)
-	Switching Costs (SC)
-	Opportunity Costs (OC)

Table 1. Comparison of TAM with GTTA (Kakar and Kakar, 2017)

However, one important dimensions of user value has been overlooked in Kakar and Kakar (2017a, 2017b, 2017c, 2017d). The value perception of users depends not only on the twin dimensions of benefits provided and costs incurred but also on the varying needs profile of the users. Kakar and Kakar (2018a) explored this third dimension of value and suggested why including it in GTTA2 will provide a more complete perspective to technology adoption. Building on concepts gleaned human needs literature the authors theorized that the basic human needs will selectively moderate the impact of UB, HB and

SB on user outcomes (see Table 2 for a summary). This proposition was first suggested by Kakar and Kakar (2018a, 2018b, 2018d) and subsequently tested in Kakar (2018c). In this study we complete the three part series by building further on GTTA2. This final version of trilogy, GTTA3, applies Levitt's (1980) total product concept to include the moderating influence of system use context on the impact of user perceived value on BI.

User Needs	**User Perceived Value**
Autonomy	Hedonic
Competence	Utilitarian
Relatedness	Social
Security	Utilitarian
Self-Esteem	Social
Self-Actualization	Hedonic
Pleasure Stimulation	Hedonic
Money-Luxury	Utilitarian
Popularity Influence	Social

Table 2. User Needs-Value mapping for interaction effect on BI

THEORY DEVELOPMENT

Kakar and Kakar (2017) in their GTTA used the aforementioned two dimensional conceptualization of value (costs and benefits) to arrive at 2 propositions leading to one theoretical statement.

Proposition 1: The BI to purchase, choose or use a technology will be positively influenced by the perceived utilitarian, hedonic and social benefits provided by the technology to the user

Proposition 2: The BI to purchase, choose or use the technology will be negatively influenced by the financial costs, effort expectancy and opportunity costs and positively influenced by switching costs

Theoretical Statement 1: "The behavioral intention (BI) to purchase, choose or use a new technology is determined by the perceived value of the technology to the user"

Kakar and Kakar (2018) in their GTTA2 included the third dimension of human needs and suggested 3 more propositions and a more comprehensive theoretical statement.

Proposition 3: Users' need for competence, security and money-luxury will moderate the impact of UB on users' value perception such that the impact of UB will be higher at higher level of these needs and lower at lower level

Proposition 4: Ussers' need for autonomy, pleasure stimulation and self-actualization will moderate the impact of HB on users' value perception such that the impact of HB will be higher at higher level of these needs and lower at lower level

Proposition 5: Users' need for self-esteem, relatedness and popularity-influence will moderate the impact of SB on users' value perception such that the impact of SB will be higher at higher level of these needs and lower at lower level

Theoretical Statement 2: The behavioral intention (BI) to purchase, choose or use a new technology is determined by the perceived value of the technology to the user. The user value calculus includes the three dimensions of value – benefits, costs (sacrifices) and user needs. While benefits will impact BI of users postively, the users' needs profile will moderate the impact of benefits on BI selectively. Costs in general will impact BI negatively except for switching costs which will impact BI positively

The GTTA1 and GTTA2 propositions are based on concepts gleaned from numerous past studies and supported empirically across multiple studies (see Kakar, 2015a; Kakar, 2015b; Kakar and Kakar, 2017 and Kakar and Kakar (2018). In this article we further extend GTTA2 to GTTA3 using Kano's (2014) theory of attractive quality and Levitt's (1980) total product concept. Levitt's (1980) total product concept is rated by the marketing guru Kotler (2003) as amongst the top 80 concepts that every manager should know about. It has been applied in areas as varied as business strategy (Slater and Olson, 2001) and product branding (Mudambi, 2002). Along with the widely accepted (Lofgren and Witell, 2008) theory of attractive quality (Kano, Seraku, Takahasi and Tsuji, 1984) we use the Levitt's total product concept to predict the relative impacts of various values – Utilitarian, Hedonic or Social provided by the product type on BI of users. Although conceptualized first in Kakar and Kakar (2017) and further suggested in Kakar and Kakar (2018) the empirical testing of the impact of users' use context got published earlier in Kakar (2017c) as the GTTA trilogy which commenced in SAIS 2017 was scheduled to be completed and published in SAIS 2019.

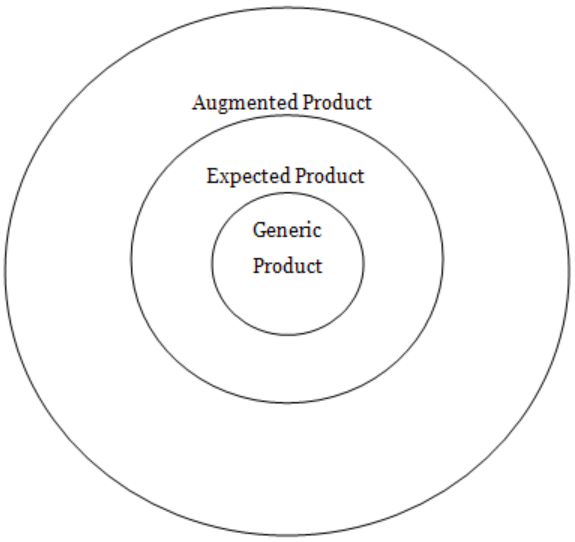

Figure 1. Levitt's (1980) Model

Levitt's (1980)Total Product Concept model (Figure 1) suggests that all elements of a product fall into three value categories: generic, expected and augmented. Generic elements are features which every product or service would offer. The generic product is a requirement to enter the market. The Expected product includes those features beyond the generic product which are expected from a quality provider. Expected product features make a product competitive in the market. Augmented elements are what surprises the consumers and which they did not expect from the product. The Augmented product features enhance the expected product by differentiating the product from its competition.

The three factor theory is popular in product quality literature as the "theory of attractive quality" (Kano et al, 1984). In the three factor theory product features are grouped into three categories, each with its own characteristics:

Basic factors: They are prerequisites and must be satisfied first, at least at threshold levels, for the product to be (Matzler, Fuchs and Schubert, 2004). The user takes Basic requirements for granted, and therefore does not explicitly ask for them. Users are Indifferent if these requirements are met as they are entirely expected but experience dissatisfaction if they are not met.

Performance factors: "Performance factors typically are directly connected to customers' explicit needs and desires .Therefore, a company should be competitive with regard to performance factors" (Matzler, Fuchs and Schubert, 2004). Fulfilling these requirements leads to user satisfaction and not fulfilling those leads to dissatisfaction.

Excitement factors: Excitement product features are those that the user did not expect. They surprise the consumer by adding unexpected value to the product thereby delighting her. Not fulfilling excitement requirements do not lead to consumer dissatisfaction.

Even though they have different origins, one in marketing and the other in quality literature, the concept in Levitt's (1980) model of the Total Product Concept and those elaborated in the three factor theory (Kano et al, 1984) are remarkably similar. While the total product concept talks about 3 types of products, the generic, expected and the augmented, the three factor theory talks about 3 types of product features Basic, Performance and Excitement. Additionally, while the generic product represents the core product, the basic features represent the core minimum features expected by the user. The generic product is thus constituted of basic features. Users do not explicitly specify them as they are prerequisites. Similarly there is a correspondence between the elements in expected layer (beyond the generic product) and the performance features. The user explicitly asks for them and knows when they are made available and when they are not made available (Matzler and Sauerwein, 2002). The augmented product consists of excitement features (beyond the expected product) which the users did not expect but are surprised and thrilled to have them in the product as they provide the users with unexpected value (Matzler and Sauerwein, 2002).

Thus while both Levitt's (1980) total product concept and Kano's (1984) three factor theory describe similar characteristics for Generic (Basic), Expected (Performance) and Augmented (Excitement) product elements (features) together they provide additional insights. Kano's (1984) model which is based on the Herzberg's (1966) theory predicts unique impacts of each category of feature innovation on user satisfaction and thereby BI. Levitt's (1980) model provides insights into the relationship among the feature innovations. While the generic features in the core product constitute the innermost product layer (Levitt, 1980) and serves as a minimum requirement for market entry, the expected features enhance the generic product to make it competitive and the augmented features further enhance the expected product and differentiates it from other products in the same product category (Matzler, Fuchs and Schubert, 2004). Thus to reach Levitt's (1980) expected product level the generic features have to be first provided for in the product. To reach Levitt's (1980) augmented product level both generic and expected features have to be first provided for in the product.

This explains the reasons for the empirical findings (Matzler and Sauerwein, 2002; Zhao and Dhokalia, 2009) that the user priority for the product features is Generic (Basic) > Expected (Performance) > Augmented (Excitement). The three types of features therefore can be thought of representing the users' need hierarchy. Thus providing augmented features before providing for core and expected requirements is likely to be non-remunerative. But providing augmented features after the providing core and expected requirements will delight users by providing unexpected value and thereby enhance their loyalty for the product. The primary benefits sought by the user from the use of the technology will thus determine which value Social (SV), Utilitarian (UV) or Hedonic (HV) will moderate the impact of the other values provided by the technology on BI.

For a technology designed primarily for utilitarian use one can expect UV derived from the product to be of higher priority to users compared to HV or SV. UV represents the value provided by the core and expected features or attributes in the technology. However, once the UV is provided at a satisfactory level, user will seek to derive augmented benefits such as HV and SV from the use of the product. Thus UV is expected to moderate the impact of HV and SV on BI such that at low UV their impact on BI will be lower than at high UV. Applying the same reasoning for a hedonic technology, HV is expected to moderate the impact of UV and SV on BI such that at low HV their impact on BI will be lower than at high HV. Similarly, for a social technology SV is expected to moderate the impact of UV and HV on BI such that at low SV their impact on BI will be lower than at high SV. Thus, in general, the primary value sought by the user from the use of a technology will moderate the impact of other values provided by the technology on its BI.

Thus, in general, **t**he primary value sought by the user from the use of a technology will moderate the impact of other values provided by the technology on its BI leading us to the following propositions:

Proposition 5: For a utilitarian technology, UV will moderate the impact of SV and HV on BI such that the impact of SV and HV will be higher at high levels of UV than at low levels of UV
Proposition 6: For a hedonic technology, HV will moderate the impact of SV and UV on BI such that the impact of SV and UV will be higher at high levels of HV than at low levels of HV
Proposition 7: For a social technology, SV will moderate the impact of HV and UV on BI such that the impact of HV and UV will be higher at high levels of SV than at low levels of SV

These propositions lead us to the final theoretical statement of the General Theory of Technology Adoption:

Theoretical Statement 3: The behavioral intention (BI) to purchase, choose or use a new technology is determined by the perceived value of the technology to the user. The user value calculus includes the three dimensions of value – benefits, costs (sacrifices) and user needs. While benefits will impact BI of users postively, the users' needs profile impact of benefits on BI

significantly but selectively. Further the user costs will impact BI negatively except for switching costs which will impact BI positively. The use contextwill will moderate the impact of user perceived value on BI such that at high primary values sought by the user from the use of the technology the impact of secondary values on BI will be higher and at low primary values sought by the user the impact of secondary values will be lower or insignificant.

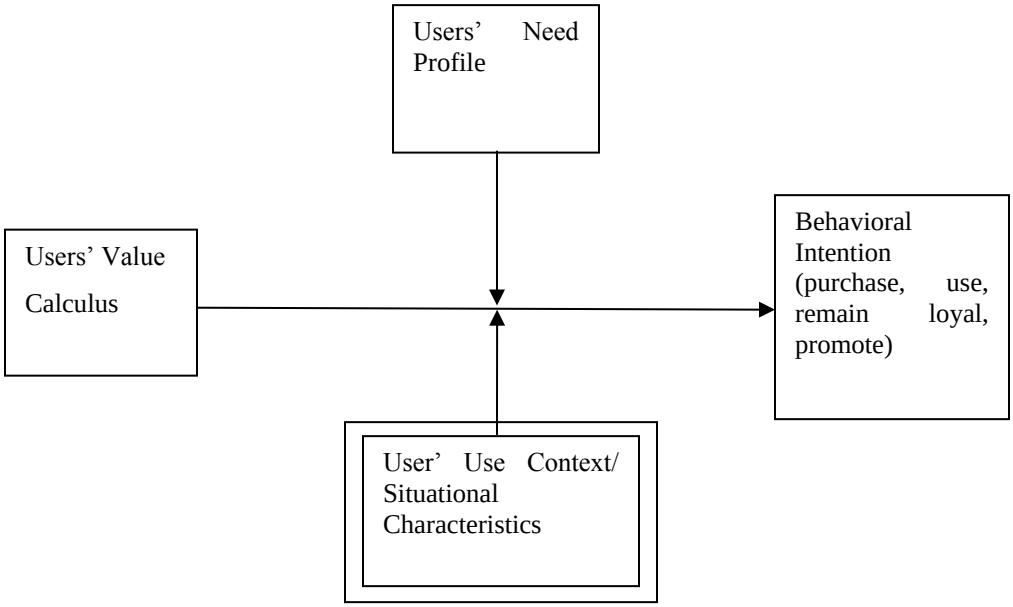

Figure 1. GTTA 3- Extension of General Theory of Technology Adoption

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