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INCREASING CUSTOMER SATISFACTION VIA BPM USER-CLIENT-CLOUD MODEL

Information Technology

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ABSTRACT

In Recent Days, Organization focuses Customer Delight as their prime focus for reasons to service people with Faster, Reliable & Cost-Effective trends. The Major area where organizations held their success is with Marketing and Sales strategies. With the advent of Cloud Computing era, Organization moves an edge ahead of their competitors by direct connectors with their promising Users. With an abstract, we are emphasizing the principle tool as **BPM** allied with a new concept, **User-Client-Cloud Model (UCC Model)** formed with *Customer-Cloud & Client-Cloud* will earn credit in developing Robust, Reliable and Reusable structure to the Organization. UCC Model architects with *Artificial Intelligence & BPM* as its core components and Integrates its operation with *Digital Channels*. The Principle approach of the Model is to let the users reach with their Requirements directly to the Client. This will yield interest on par to direct Marketing Reach and Sales.**Executive Summary**Though currently, Industries rely on Direct Campaigns for Market Research and Strategies, we want to explore and provide an option to consider the BPM for the role. The Challenges any Horizontal and Vertical industries tend for solution is to speed up the approach with CDI as an option to gather Customer Requirements. However, BPM and its tools in the market could be far more simple and easier with a reusable solution across industries. This paper emphasizes to include the latest digital horizons to put in use with BPM-UCC Model.**What** is the Prime Focus of this Model? - To automate directly the Customer Requirements to Business Requirements.**Why** is that required? - To increase the Customer delight, considering Customer Delight Expectance to be satisfied at the earliest.**Where** is the source point? - Cloud ways to integrate each and every user via Social Intelligence - Affective Computing via Marketing Digital Channels.**Who** were the involved members? – Users, Interactive System and End Client Management.**When** will this be useful - Either gathering information on a well-known Competitors Product or Organization own product, to be iteratively provided solutions in quicker Time to Market based on the Customer Delight Expectance outcomes.**Which** will provide such a solution? - The concept of "Urgency Value" in BPM Tool - Pega PRPC provides an initial solution to gather and prioritize the Customer Delight factors.**How** this can be framed into a solution - Simple! Users responds via Digital Channels like Mobile, Telephone, Social Networking Media, Emails and send their inputs to an External Public Cloud which is integrated with the Enterprise Server, running on "Social Intelligence" program which gather and input Data to BPM Tool. Thus, User's Feedback in the form of Requirements would be automated and documented as One Business Solution for that iteration.

KEYWORDS:

Introduction:

"Customer Delight" is increasing seen with drivers as the Sales and Marketing strategies in any Enterprise Planning and Management.

The aim of this paper is to facilitate the ways of exploring the Customer's Requirements directly into Business needs. With Organizations always focus on enhancing the Customer's Requirement, the paper suggests to implement "Business Process Management" as a solution to drive on Customer focus. With the management looking far ahead in terms of Planning Strategies, it is best to implement the emerging trends like Cloud computing in gathering the information and supplementing the customer's needs in an appropriate Lead Time to market. For all, the key is to have the right business Requirements in an iterative measure.

As quality trends for continuous improvement alongside with effective Cost Management, so is the Customer Delight increase proportionately with its driving factors.

Customer Delight Expectance ∝ Delight Factors / Time

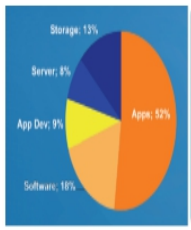
The Quality factors are the input parameters that fetches from Customers via "Affective Computing", an Artificial Intelligence methodology that work well as to Social Intelligence and put on to Customer-Cloud of BPM User-Client-Cloud Model. In this paper, we would *limit only on Customer's Cloud of the BPM-UCC Model.*

Objectives of the Paper:

1) Introduction to BPM User-Client-Cloud Model
2) An attempt to enhance Customer Delight via Affective Computing
3) Factors influencing Customer Delight in BPM-UCC Model
4) Choice of Digital Channels Customer Cloud as input to BPM-UCC Cloud

1.1 Introduction to BPM User-Client-Cloud Model

The idea to integrate the BPM with a Cloud model is coherently chosen in modern days. As any BPM tool allows the business to bring together the disparate, diverse and complex business process and rules onto one platform. The choice of one BPM tool is more likely with most industries is Pega as its process commander makes it possible for Business Analysts and users to customize the business process. Integration of information is the principle focus for enterprise planning. Cloud ways of integration is the new horizon that all competing organizations are investing upon. In a conference, IDC 2008[1], Cloud Computing is defined as The Fifth Generation of Computing (after Mainframe, Personal Computer, Client-Server Computing, and the web). It was also predicted that the world-wide spending on 2012 will be as mentioned below and the surprise is turning out more than as expected.



Year	2008	2012	Growth
Cloud IT Spending	$16 B	$42 B	27%
Total IT Spending	$383 B	$494 B	7%
Total – Cloud Spend	$367 B	$452 B	4%
Cloud / Total Spend	4%	9%	

Fig 1.1.1 – Cloud Computing Share from 2008 - Present

1.2 Problem Definition & Preliminary ideas.

Concept Diagram of BPM-UCC Model

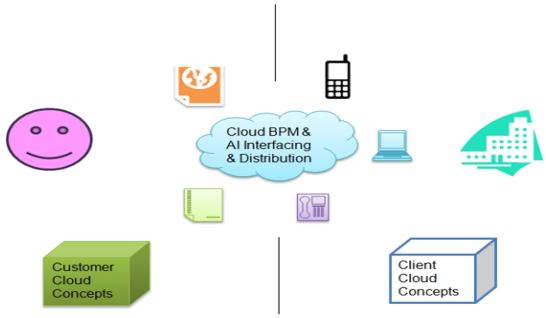


Fig 1.2.1 – Concept Diagram for BPM -User Client Cloud Model

The above diagram symbolizes the concept of integrating the User Requirements via powerful Digital Channels like Web-world, Forums-Questionnaires, Telephones, Social Networking & the Mobile Devices.

The above choice is already likely seen increasing with Marketing Campaigns set up by various Industries.

For Example: Leading Mobile manufacturers tend to gather the feedback from the Customer's via Online Feedback Questionnaires.

But the challenges of their success with which they transform their feedback into business Requirements are still not fixed and always have scope of continuous improvement. More importantly, the time to market is increasingly high to gather the voluminous information from all their end users, by which they value Customer Retention.

With the above aspects, our focus is that the time to market or the lead time depends on with the factors influencing the Customer's Cloud and thereby to make attempts to enhance Customer Delight.

2.1 An attempt to enhance Customer Delight via Affective Computing

Gathering information to the cloud is more important as that makes the mean to decisively collate the Requirements utilizing concepts of "Affective Computing". Affective Computing is able to predict the actions of others, by understanding their motives and emotional states. This involves elements of game theory, decision theory, as well as the ability to model human emotions and the perceptual skills to detect emotions. Also, for good human-computer interaction, an intelligent machine also needs to display emotions. At the very least it must appear polite and sensitive to the humans it interacts with. At best, it should have normal emotions itself.

Altogether we can broadly classify the features under following categories:

1) Factors influencing affective computing
2) Factors influenced to output Customer Delight.

Let's focus on the Factors that could influence affective computing:

- Speech Note and Response rate – This could be possibly handled as a source of input from the customer's via Telephones / Mobiles when under direct communication.
- Virtual Sharing and Response Time – This could be possibly handled, when customer's are exposed to Forum Questionnaires, Email Exchange or SMS Exchange, where mode being indirect communication.
- Gestures and Reactions – This could be possible when customers tend to expose to Face to Face communication via Live Social Networking.

All the above imparts important ways to seek the Requirements from the Customers, or indirectly, the current market trends to Business Requirements. These above inputs can be rendered using the computing techniques either via Affective computing – Artificial Intelligence or by current methodology of Interactive Intelligence, while the latter might have impact with an increase in Time Delay.

2.2 Affective Computing in BPM-UCC Model

The Affective Computing is not a newer to modern cyber trends. This is being profound widely in day to today modes of Media and Communication sectors, right from Mobile Phones to Media Forums by means of Human - Device interaction. In here, we are just going input or gather the information via various Digital Channels to a common External Customer Cloud.

With customers reaching out to the external cloud, the view is to integrate and get the information to the Enterprise Application Server.

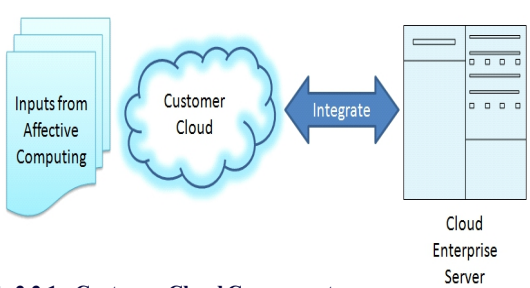


Fig 2.2.1 – Customer Cloud Components

2.3 Integrate and Assign "Urgency" for Factors from BPM-UCC Customer Cloud

A tool of BPM - PRPC provides a concept of Urgency Feature that could satisfy the purpose of automating our tasks.

Urgency is a numerical value assigned to a particular case in PRPC. The higher the value, the more urgent the factor is considered. The Urgency values thereby determine the concept of "Get Most Urgent" where the factor having the highest urgency value is returned to the system for processing.

For this purpose, a Perspective matrix is suggested, with values rated for generalization as High rated 3, Medium rated 2 and Low rated 1. The Urgency Matrix suggested below is perspective and pertaining to in-depth analysis.

The above values could be altered based on the Business call and type of campaign that the Organization is keen to take interest on. The above is only the factors that are used to fetch the factors on "Affective Computing – Social Intelligence".

There are other major factors that directly tend to the Customer Delight.

3.1 Factors influencing Customer Delight in BPM-UCC Model

To generalize, Customer Delight is an organization strategic way of making customer retention in order to sustain and capture the market.
In simple terms, **Customer Delight Expectance Delight Factors / Time**

We would discuss in this paper on 10 Factors that influence the Customer Delight. They could be broadly classified based on:

1. Build Context: The factors that determine the development of Live Product / Software.
2. Economic Context: The factors that play a role in financial Forecast and Estimation.
3. Test Context: The factors that tend for Customer's Satisfaction.

	Affective Computing Factors	
	Speech Note	**Response Rate**
Telephones	3	3
Mobiles	3	3
	Virtual Sharing	**Response Time**
Web Questionnaire	1	1
Emails	2	1
SMS Exchange	1	1
E-Polls	3	3
Web Invites	3	1
	Gestures	**Reactions**
Video Telephony	3	3
Live Conference	1	3
Video Chats	2	3

Affective Computing Factors for Digital

Table 2.3.1

The various Customer Delight Factors that fit into above context as shown in the figure in a broader classification are:

1) Functions
2) Technique
3) Tools
4) Aesthetics
5) Brand
6) Cost
7) Demand
8) Social Value
9) Comfort
10) Environment

The above factors do add Gap-Fit after a lot of Market research; however, for most of the time, it's not iterative at a greater pace for the Clients.

3.2 Assign "Urgency" for Customer Delight Factors

From a Perspective case study done on a Product X in current market, a sampling report is done for the factors. From this, we will derive the "Delight Factor" and proceed on with Iterative Business Requirements to meet Customer's requirement.

Trend for Delight Factor - Customer Requirements Vs Urgency Value - Build & Test Context

From the perspective Study, the Customers Delight over a period of 10-12 days with terms to Build and Test Context were:

Context	Factor	Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Impact
Build Context	FUNCTIONS	1	2	4	5	5	4	2	1	1	1	1	1	Direct
Build Context	PLATFORM	5	5	5	5	4	4	4	4	3	3	3	3	Direct
Build Context	TOOLS	1	3	4	5	4	3	4	5	5	5	5	5	Direct
Test Context	COMFORT	1	2	2	3	3	4	4	5	5	5	5	5	Direct
Test Context	ENVIRONMENT	5	5	5	5	5	5	5	5	5	5	5	5	Direct

Table 3.2.1.1 – Urgency Value for Delight Factors w.r.to Build & Test

Trend Graph – Build & Test Context:

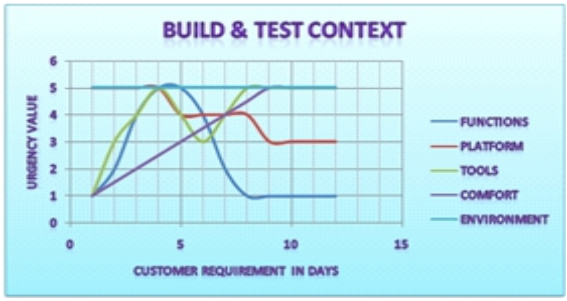


Fig 3.2.1.1 – Trend

Trend for Delight Factor - Customer Requirements Vs Urgency Value - Build & Test Context

From the perspective, Study, the Customers Delight over a period of 10-12 days with terms to Economic Context was:

Context	Factor	Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	
Economic Context	AESTHETICS	5	5	5	4	4	4	3	3	3	2	2	2	Direct
Economic Context	SERVICE	5	5	5	5	5	5	5	5	5	5	5	5	Direct
Economic Context	COST	1	1	1	1	1	1	5	5	5	5	5	5	Direct
Economic Context	DEMAND	1	2	4	5	5	4	2	1	1	1	1	1	Direct
Economic Context	SOCIAL VALUE	3	3	3	3	3	3	3	3	3	3	3	3	Direct

Table 3.2.1.2 – Urgency Value for Delight Factors w.r.to Economic Context

Trend Graph – Economic Context:

Fig 3.2.1.2 – Trend

3.3 Determination of the Delight Factor and Customer Delight

Delight Factor, based upon the Urgency Value can be described as the mean of the all the Customer Delight factors that influence the Customer Requirements.

Delight Factor = ∑ Customer Delight Factors

On knowing the Delight factor, Customer Delight could be provided in terms of Urgency Value.

Customer Delight Expectance Delight Factors / Time

i.e., Customer Delight Expectance = (1-(Time Urgency – Delight Factor) / Time Urgency)) * 100

As the Delight Factor is measured, the chances where Customer Delight is predicted. Let us assume that the Time is provided with an urgency value of 5. So as the time progress, time to market gets exponential decay for Customer Retention or in other words Expectance increase in time.

Delight Factor	Time Urgency	Customer Delight Expectance
1	5	20%
1.5	5	30%
2	5	40%
2.5	5	50%
3	5	60%
3.5	5	70%
4	5	80%
4.5	5	90%
5	5	100%

Table 3.3.1 – Delight Factor Vs Customer Delight Expectance with

From the Perspective Study observed, the average of Delight factors would be calculated and hence the Customers Delight Expectance will provide the necessary inputs to the Business Requirements.

4.1 Choice of Digital Channels Customer Cloud as input to BPM-UCC Cloud

The idea of choosing the Digital Channels over a direct campaign is to increase the automation ways of fetching data from end users. While this help in reduce the investment to cost in traditional marketing campaigns and thus indirectly help in the Time to Market.

4.2 Customer Requirements via Digital Channels.

With Affective Computing and Delight Factor Urgency value is studied, it requires now actual customer thoughts rated as the Customer Requirements. There are various quality features that act as source to fetch the data. We shall see a matrix of influencing factors and convert the inputs to fetch the Delight Factor.

The Customer Inputs are based on the Marketing Matrix from a Questionnaire response as below:

Customer Inputs	Delight Factor	Context
Efficiency	Functions	Build Context
Functionality	Functions	Build Context
Performance	Functions	Build Context
Reliability	Functions	Build Context
Compatibility	Platform	Build Context
Flexibility	Platform	Build Context
Installability	Platform	Build Context
Expandability	Tools	Build Context
Integrity	Tools	Build Context
Attractability	Aesthetics	Economic Context
Simplicity	Aesthetics	Economic Context
Price	Cost	Economic Context
Availability	Demand	Economic Context
Competitive	Service	Economic Context
Maintainability	Service	Economic Context
Servicability	Service	Economic Context
Reusability	Social Value	Economic Context
Safety	Social Value	Economic Context
Security	Social Value	Economic Context
Testability	Comfort	Test Context
Usability	Comfort	Test Context
Verifiability	Comfort	Test Context
Dependability	Environment	Test Context
Robustness	Environment	Test Context
Verifiability	Environment	Test Context

Table 4.2.1 – Customer Input Matrix.*

* Subject to vary with different regions / industries

The above Customer Inputs might vary for different industries. Different Industries plan their own Strategic measures to determine the Customer Inputs. The above Customer Inputs are made from the study on sampling with a group of people for couple of weeks from a Vendor in a region. Thus, Social Value could also play a role in deciding. The above is just an example; however, there may be a lot of Marketing Matrix possibilities.

4.3 Digital Channels to BPM-UCC Model

The Digital Channels or Media chosen to input the Customer Inputs are Mobile, Video Telephony, Tele Conference, Web Polls or Questionnaires via Forums, Emails and Bulk Messaging.

The above seem to be expenditure led activity if done via Direct Reach of Consumers and dependence on time does increases for the inputs to be gathered. To overcome this, Organizations can go for "External Cloud Service" that could fit in a common cloud.

4.4 Suggestions for various Digital Channels

Mobile: Choose partnering with the local Service Provider
Video Telephony: Yahoo, G-Talk Video etc
Tele Conference: VOIP
Emails: Gmail, Yahoo Mail integrated to a common Office Outlook etc.

Web Polls / Questionnaires: Facebook, Twitter or in common Social Networking.

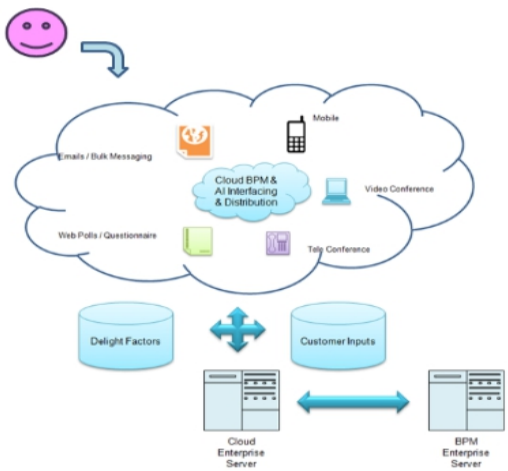


Table 4.4.1 – Sample Architecture Diagram for BPM – UCC Customer Cloud

Now, the Factors & Inputs are collected into respective Databases and fed into Cloud Enterprise Server.

The Cloud enterprise server has the two components:

1) Installation component of Affective Computing software – This interact with the Cloud or indirectly the Users and Responds back "N" number of times, till it ends its conversation with the user. Thus, the values are stored for Customer Input and Delight Factor.
2) Prioritizing Factors – This is something the Business needs to feed the Matrix accordingly. This also includes the risk factor which will be purely determined based on enterprise planning.

4.5 BPM Enterprise Server

The BPM Enterprise Server is something that's integrated only with the Cloud Enterprise Server. Here the inputs are fed into the BPM Enterprise Server to create an ***Application Profile.***

Now that the Application Profile is created based on the Urgency Values, a document is finally designed to assist in the information gathering phase of a project's life cycle.

This Application Profiler then can decide upon the Type, Frequency and Accessibility to respond to the Customer Requirements.

Well in this Paper, the point to reach the Application Profiler is considered to be the final phase of the BPM-UCC Customer Cloud Model.

Thus, a typical Application Profiler for BPM-UCC Cloud could be as below

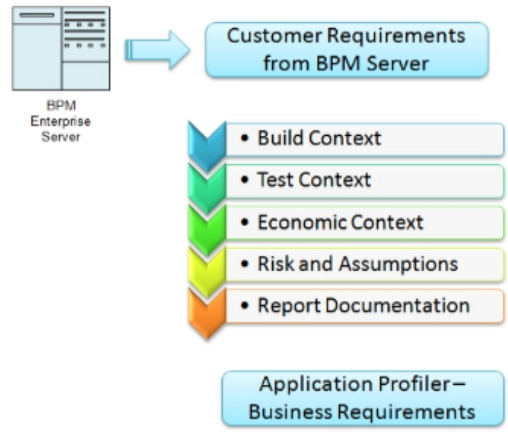


Table 4.5.1 – Application Profiler – Business Requirements

Once the Application Profiler is made, a report is created with use cases could be here referred to as customer delight factors.

Conclusion:

The Model Architecture is still subjected to in-depth study, while this is an attempt to utilize the feature of BPM to automate the process. The concept is raw and will subject to lot of modifications in future.

Thus, this approach of gathering the Requirements is more so could be idealized as "Customer Driven Requirements" in order to enhance Customer Delight!

Appendix – Assumptions

1) The External Cloud Architecture is been assigned with a concept of integrating a server, that is able to commute via Affective Computing technique of Artificial Intelligence.
2) Though the suggestions for various Digital Channels are used, we are not considering "Interactive Intelligence" with automated teller response, rather to gather information on maximum extent.
3) Cloud Architecture is not defined and considered as though in practice.
4) The Urgency values for Delight Factors and Affective Computing Factors are purely pre-determined and not made sufficient study.

Appendix – Table and Figures

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- Table 3.3.1 – Delight Factor Vs Customer Delight Expectance with Time Urgency as 5 (Constant)
- Fig 3.3.1 – Trend graph Delight Factor Vs Customer Delight Expectance with Time Urgency as 5 (Constant)
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- Table 4.4.1 – Simple Architecture Diagram for BPM – UCC Customer Cloud
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Appendix – Abbreviation

- CDI – Customer Data Integration
- BPM – Business Process Management
- UCC – User Client Cloud

- SMS – Short Message Service
- VOIP – Voice over Internet Protocol
- G-Talk – Google Talk

Appendix –Citations

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