

## Determining Calibration or Standardization of interaction function in between two business variables, leading to real-time modeling, through understanding potential of human resources management and business

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### Abstract

Any business, be it is primarily based on human resources or financial or operation or strategic or any subject of management, should consist of variables or attributes of management with their inter-related cause-and-effect variations. This variation or fluctuation should further lead to form up an inter-relational product of business and management. It is essential to understand whilst it is always axiomatic that all subjects of business management are inter-dependent to each other and an organization should not exist without a co-existence and relational variability to flourish among variables, irrespective of the subject. Also, creativity similarly or innovatively is important for a subject of management with respect to other subjects as well. This is how a creative mind could propagate to what could be attempted to the least at least or a business should no longer be believed to be unsuccessful in achieving its objectives. With this perspective in view this paper is written and all subjects or disciplines are hereby believed to be equally fulfilling. The paper explains to relational outcomes between two acts of business, promotion (P) and sale (S). Lots of fundamentals exploring out on their interactions (for any given business) should unfold to a discovery indeed and hopeful to be also acting as useful as creative or useful one by business principles (which is often done by business objective in business). The paper finally has culminated into constructing a model with several boundary conditions of variables. This model is newer to the study. It is expected that prospective future scopes should be there on this research.

**Keywords:** Adaptation, Business model, Calibration, General business, Interaction, Interaction positivity, Promotion, Sale, Standardization.

### INTRODUCTION

There are various categories of business products or services and sale of which may not always demand business marketing (or marketing programme) to negotiate or help with [Biemans et al., 2022]. With advancement of technology and competition, marketing to sale has become an essential function [Lysus et al., 2011]. Various researches have proclaimed it that marketing initiation improves quality or rate or volume of sale [Rehme et al., 2012; Pembi et al., 2017; Dey, 2022]. Also, psychology of customers does get customized by marketing attributes and it results to a good relationship marketing and sale [Cruceru et al., 2014; Grönroos et al., 1994]. It is although a fact that marketing has definite sort of negative impacts upon customers and business [McColl et al., 2020]. In this present study, term “promotion” will be applied or used in place of marketing. Because this study considers

that promotion as a term is closer to happening of sale, than only marketing. Also, promotion as marketing programme is usually often taken forth to improve sale or business as a whole [Turnbull, 1996]. So, to define a sale happening correctly, term “promotion” the study assumes to be taken forth or applied instead of applying term “marketing” against it (business function). For information, marketing may not guarantee happening of sale while promotion does so, with more confidence or expectation [Dawes et al., 2001; HBR, 2006].



**Figure 1: Interaction of P and S**

For a given business, sale as a result of promotion gets defined to the business when sold, by customer (Figure 1). There should be an accurate accountability between promotion and (its) sale. If not, a gap is an obvious to form or exist. This gap provides in many ways a degree of erroneous to business management, indicating to non-correspondence between them [Sharma et al., 2016; Kala et al., 2011]. So, relationship between sale and promotion can be termed as interaction that plays in to accomplish objectives of a business [Rehme et al., 2012; Cruceru et al., 2014].

Term “interaction” as a function to which sale and promotion are the two inter-related terms. As a result of interaction, there may be two usual events that a business may experience. One, promotion is higher than sale and other one, sale higher than promotion. This difference is by magnitude, by suitable unit of measurement. Many businesses have started to follow a standardization (of interaction) in order to avoid such difference [Yuan, 2014; Virvilaite et al., 2011]. Let’s this standardization be termed as calibration, to be meaningful of more scientific nature. This present study has constructed a model of standardization which would be able to indicate the value by gap or difference, on an interaction, that may be occurred to or followed by. Such model can be also treated as interaction model.

Usually, in an interaction, promotion and sale go side by side with variability in their own profile [Lysus et al., 2011; Rehme et al., 2012]. Without a standardization, this fluctuation may be an unending phenomenon that may lead to an unpredictable marketing nature and to sale [Mandler et al., 2021; Matthyssens et al., 2006; Day, 2011]. To this, sometimes promotion (denoted by P) does go above than sale (S) and sometimes lower than S, by magnitude. This magnitude, also mentioned above and explained afterwards by this present study, can be for an example, like 100 unit cost of promotion per unit volume of sale or vice-versa. Can there be 100 unit of promotion occurring to 100 unit of sale? Why should a promotion lose to cause an equal or higher magnitude of sale than it? Or, rather, could 100 unit of promotion be able to specify (or forecast) its correspondence sale, by a limit? These should invite a standardization or calibration to take care of which this study has tried to understand, through a construction of model, described in methodology afterwards.

Objectives of the study may include the following -

- To explain interaction between promotion (P) and sale (S).
- To formulate calibration of interaction.
- To obtain an equilibria of interaction.
- To determine model of calibration or standardization.
- To describe several insights of business behaviour by interaction.
- To understand bonding between P and S on interaction.

## METHODOLOGY

**“Promotion and Sale, together, in a cohesive bonding is better responsive than individuality”** - with this theme in mind this paper of research interest has been built up of. In any business, promotion without sale or reverse is not possible. There is always a co-existence of these twos. A better bonding by degree of cohesiveness is always to be a better reflective to a market’s response to a given business. Term “cohesive” or “cohesiveness” in this study is a measure of level of bonding between the twos. Later in the study, this term has although been further modified or explained by term “relative weightage”.

In general, in an interaction between business and customer, variability of sale should always consist of a gradient which is represented by ratio of P and S or S and P. This gradient, simply calculated by the ratio (a change in P to change in S), is functional to variables as involved to P and S. And, there should be a simultaneous formation of P

and S, over a life-cycle of business (Figure 2; dotted lines for S and firm lines for P). So, it is nonetheless to mention that an ordinate value must be in existence always in between the variability of P and S. Also, trajectory of P can be above trajectory of S (shown in Figure 4) because of the fact of P and S fluctuation of market economy and various macro or micro variables of business.

Depending on a given market and business, character of P or S is always found out. This character is mostly signified by value or magnitude that the business is achieved by. A characteristic value of P more than S does not mean that the business is running a wrong or in loss, rather, that might be on enhancing the business strengthening on sale of long-term or else other targets of business as well. So, such character by value is important to know or anticipate for both the cases shown by Figure 3 and Figure 4.

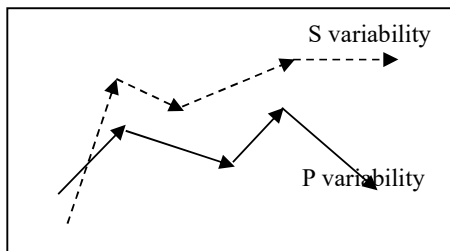


Figure 2: P and S profiles

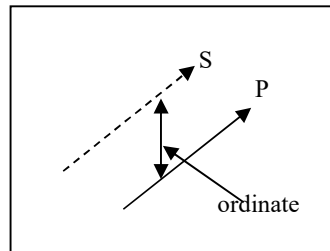


Figure 3:  $S > P$

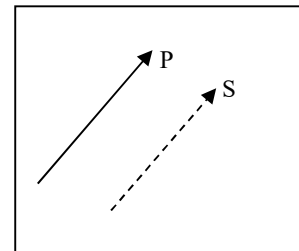


Figure 4:  $P > S$

This present study has determined the strength or character of business by ratio of P to S as applicable for the two cases (mentioned above) in order to investigate several insights of the phenomenon of interaction between P and S. Various findings or insights are now going to be explained so as to understand the study as a whole.

#### Relative Weightage (RW)

The ratio of P to S (or S to P) is defined as relative weightage in the study. The term is not exclusive of infinitesimal or instantaneous nature. It can be defined as strength or potential in a relative manner of simultaneous happening. At any point of interaction, we can get the potential as change in P to change in S. This potential if expressed via ratio would be  $dP/dS$  or  $dS/dP$  (infinitesimally) and  $P/S$  or  $S/P$  (discretely). This ratio of potential expresses a comparative weightage of the twos, together, simultaneously. So, term as relative weightage (or RW) is profoundly created for the interest of the study, where P and S in the ratio plays itself as weight or weightage respectively giving the individual strength obtained on the interaction.

As explained by Figure 2 and Figure 3, this strength or relative weightage should be  $S/P$  and  $P/S$  respectively, in order the ratio to be greater than numerical value of 1. However, it would be useful for any level of interaction between P and S if there is a standardization available which can provide, in advance, a view of estimation or anticipation for a given value of P and S. This present study has done this (standardization) in a theoretical manner with lot of insights playing in the interaction.

#### Fluctuation in Equality Level, Equilibrium Point

In every business, there should be a constant changing nature of P or S and corresponding S or P (Figure 2). This changing nature is characterized by a perpendicular spacer or ordinate (Figure 3, Figure 4), called in this study as *equality point*, denoting to indicate the difference between P and S. There must be sometimes this equality level much closer or narrower and sometimes it would be of too distant magnitude. This nature of fluctuation is very common to interaction of any business by promotion and sale.

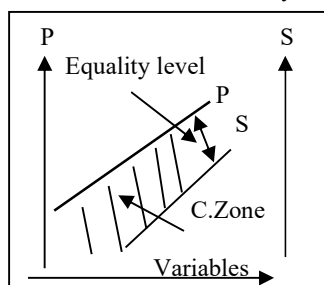


Figure 5.1: Converging

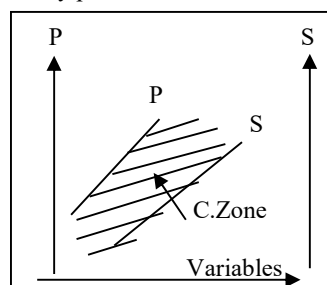


Figure 5.2: Diverging

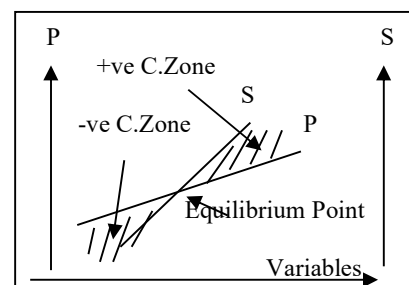


Figure 5.3: Equilibrium of P and S

Figure 5: Patterns of RW

It is also to be mentioned that equality level is not same as that of ordinate (as shown in Figure 3). On 3dimensional perspective, it may be a research interest that how equality level behaves with ordinate, over fluctuations (Figure 2) and others like parallelism etc.

**Table 1: Dimensional definition of P and S forming to RW**

Sl.	P	S
1	Unit cost	Unit sale revenue (in cost)
2	Unit volume	Unit volume of sale output
3	Degree of promotion	Degree of sale
4	Broadness of promotion	Broadness of sale
5	Short-term or Long-term promotion	Short-term or Long-term sale
6	Qualitative promotion	Qualitative sale

^unit of P may be not in terms of quantitative measure always, whereas S to be in quantitative measure always.

#### ***RW Patterns***

Unlike a parallel nature as shown by Figure 3 and Figure 4, there should be three kinds of the spread or RW pattern of P and S (Figure 5). These are, namely, converging, diverging and superimposition. In converging, curve of P and S tends to meet one another as we go forward to future interaction outcomes (Figure 5.1), whilst they diverge from in case of diverging kind (Figure 5.2). In case of superimposition, there should be a point of equilibrium where P and S to coincide and consider to be of equal to each other (Figure 5.3). Such point of inflection, called here as equilibrium point, should be in numbers as there would be several ups and downs of P and S in themselves, over a business interaction.

Field trapped inside or resting in between P and S curve is called as zone of calibration or calibration zone (C.Zone) which is the objective of this present study in order to explain it about how it's coordinative and can be constructed or anticipated in a modeling way to understand several insights of business. This C.Zone which may be formed by patterns is different and of unique feature, in each case of Figure 5 (shown by hatch lines). If S minus P is positive, then corresponding C.Zone would be of positive nature and vice-versa.

In C.Zone, there should be numerous lines or curves bearing with RW values indicating to be a standard or calibration to an interaction. Those numerous expressions have been assimilated into a modeling in this study, called as calibration model (described afterwards in appendix 1 and appendix 2).

**Table 2: Relative Weightage and its business implications**

Kind of RW	Feature	Variables of RW
Sale based (dP/dS)	Promotion is measured or weighed down by value or magnitude of S.	There may be same or different attributes or factors that can play as variables to P or s determination and on the interaction as well.
	S is given the emphasis or objective. Indirectly, P is represented by S.	
Promotion based (dS/dP)	Sale is measured or weighed down by value or magnitude of P.	
	P is given the emphasis or objective. Indirectly, S is represented by P.	

#### ***Weightage By Interaction***

An interaction between P and S should always exhibit a need of P and S. It is nonetheless that a business is never to an end if S is achieved at a level or P is getting demanded to for acquiring better marketing edges or more persuasive psychology among customers or higher sale(S). Conversely, a business should always be functional to P and S both. There should be comparative force or a differential (between P and S) playing in any marketing of business, depending on magnitude of P and S. Suppose, 10 unit of promotion (P) is used to obtain 20 unit of sale (S) in a business. So, such business has a differential of 0.50 on the basis of ratio P to S. It can be similarly said that a sale (S) of 20 unit requires P of 10 unit, then the differential would be of numerical 2.0 by ratio S to P. This differential is nothing but the weightage.

Table 1 gives an illustration of some (least not the lasts) of measures to which P and S can be expressed. Now, it is true that weightage can be individual and relative. For individual weightage, there is no change in P or S, over course of interaction of business. For relative weightage (RW), there should be a continuous change, making a

difference in between, resembling the fluctuation as well (Figure 2). However, in any business marketing, there should be a continuous practice to have change in S or P. Rather, business with RW is rational than individual weightage.

#### Classification of RW

As explained above, there can be two kinds of RW, one is sale (S) based and other one P based. This present study has explained RWs in terms of infinitesimal consideration. So, sale based RW is  $dP/dS$  and promotion based as  $dS/dP$ ; where dP or dS denotes to the change in P or S respectively and symbol “/” indicates to division operation. Table 2 is shown with features of RW. It is required to be mentioned that each kind of RW has twin implications like two sides of one coin. This means each RW classification is applicable for both P and S, as a relative effect, simultaneously.

Negativity as an effect of interaction should always be avoided for a business to be proclaimed as at least a sustainable one. This effect, called as relative effect in this present study, is related to functional expression of P and S (Figure 6). Suppose, P is a function of some attributes or variables and likewise, S is also of some variables. Then effect of interaction would be either P minus S or S minus P. This effect as relative effect should be certainly applied to relative weightage with positivity of P or S. This positivity may be of two types, one is sale(S) positivity and another one would be promotion (P) positivity.

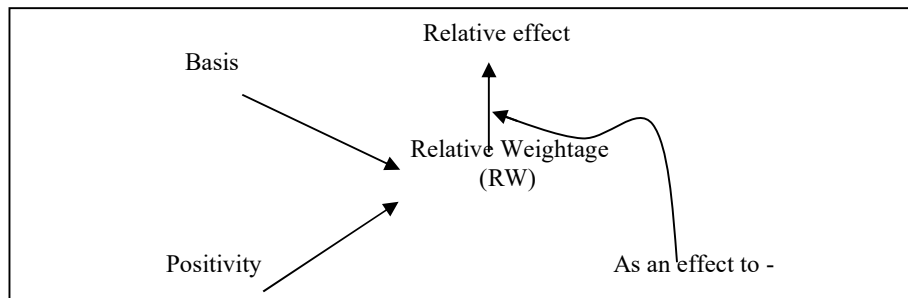


Figure 6: RW and interaction effect

Table 3: Effect of interaction as relative positivity

Sl.	Kinds of RW	Explanation	RW with positivity	Explanation
1	Promotion based	• Only promotion needs.	Promotion based; promotion positivity	Highly promotion demanding.
2		• Sale levels, high or low, are functional to given promotions.	Promotion based; sale positivity	Promotion demanding with sale diluting (the promotion).
3	Sale based	• Only sale needs.	Sale based; sale positivity	Highly sale demanding.
4		• Promotion levels, high or low, are functional to given sale levels.	Sale based; promotion positivity	Sale demanding with promotion diluting (the sale).

So, for each classification of RW, there would be these two types of positivity applicable. RW with positivity would be able to explore new possibilities of the interaction to pursue business goals with more control and accomplishment. A business can be diagnosed well once it is tested by RW and its all positivity. Table 3 gives the explanation of what a business might be calling for in maintaining the positivity (Table 4). Thereforth, it is obtained that once a basis (P or S) culminated with positivity would form RW with positivity which should exhibit certain character as an effect by relative positivity (Figure 6). For information, term “relative” or “relativity” is to be used in this present study as a measure (discrete or infinitesimal) by division operation or a derivative.

Table 4: Components of relative positivity of RW

Condition of interaction phenomenon	Feature
Promotion positivity ( $P-S \geq 0$ )	<ul style="list-style-type: none"> <li>• In order to keep promotion on.</li> <li>• Sale may be at lower magnitude continuously and significantly.</li> <li>• Better persuasion making may be an objective of business promotion.</li> <li>• Profitability must be at ease.</li> </ul>
Sale positivity ( $S-P \geq 0$ )	<ul style="list-style-type: none"> <li>• In order to keep sale on.</li> <li>• Promotion may be at lower magnitude continuously and significantly.</li> <li>• Better market condition, dominance, sale futility, etc. may be an objective of business selling.</li> <li>• Profitability must be at ease.</li> </ul>

### Calibration of interaction

Term “calibration” has been used to indicate a wide range of existence of RW profile that can easily provide a base of measure or correction.

It is clear from Figure 2 to Figure 5.3 that there is existence of several profiles of P and S for C.zone. It is self-expressive. This facilitates an incorporation of concept of life-cycle (detailed in Appendix 1). For example, a higher RW should belong to a life-cycle stage of maturity or decline. A lower RW should mean to birth or death stage by life-cycle. So, calibration would be possible to get determined for profiles in the C.zone which also indicates a life-cycle stage. We’ll learn it in Appendix 1 and based on which we’ll learn how to have a model of it in Appendix 2.

### Major findings of the study

- P and S as brought into an interaction binding providing a *relative effect* to business, resulting to domination and control, either.
- Concept of *weightage* consideration for P and S would signify to unit-based potential (Table 1).
- Concept of *relativity* as propounded by division operation or derivative gives a measure of acquisition or achievement.
- *Positivity* consideration makes the relative weightage a little more advanced to equip with more balances.
- There are several possible profiles of RW providing a corrective base or measure that can be applied to and used as an anticipatory measure or estimate. This profile is nothing but *calibration profile*.
- Another finding is *life-cycle* which is applicable alongwith profiling by calibration giving the implication of investigation of business aging or edging to competitiveness or sustainability.

### Future scope of the study

Calibration model as objective of this present study could have many ways to get it formed and subtraction operation is used to illustrate the study only (Table A.2.1, Appendix 2). All the considerations or concepts of the study have an alternation for innovation or research that can be similarly applied to. Negative sign as found from equality level of model, in the model, has similar and equal importance as that of positive ones and it may have implications on several practical cases like Shen, 2019; Osman et al., 2011. Because, it is just as opposite of the meaning as that of positive variable or function. Moreover, mathematically the study is very sound to become applicable by Fourier series of application so far as the continuity and repetition in the phenomenon of P and S in interaction is found to happen in any business operation and also exceptions [like Xin et al., 2016]. With all these, not as last but the least, the present study of calibration model would be able to correct or replicate or act as guide to real-life operations of businesses.

## RESULTS AND DISCUSSION

Business does not occupy to be in existence of sale only or promotion only. Rather, it extends its applicability of operations to many folds to improve profitability or business. It takes in promotion and sale with equal importances and all possible measures. A sale happened means a promotion happened in a given business. That virtuality or psychology of a sale to be incumbent enough by promotional ventures is vital. Many a times, it is observed that accountability of sale or promotion does not get real or actual reward. This is the unaccountability onto them (P viz-a-viz S). A correct connection, to sense of standardization, [Brei et al., 2011], of a promotion corresponding to a demand of sale is required and vice-versa. Not either of these two should be taken as an easy task to accomplish.

It is not about an effectiveness getting maintained, but it is about correct definition of business to be set in, transparently. More transparency would give better learning of resonance in marketing and business. There are lots of severity that a business must travel into and those and many of those others remained invisible or unknown could have not known in anticipation or like if not accounted P and S with clear cut accountability. All these have become more customer centric in business [Lemon et al., 2016].

Model of calibration, as a whole, provides the scope to learn all the corners in order to become successful in any business like Herpen et al., 2012 or Griffith, 2021 or Neuhaus et al., 2022. The model might have been constructed by simpler way or methodology but it should be taken as a flight-path to launch many flights with higher carrying capacity or maneuverability to fly. The present study, by the model, understands inner exploration of interaction to diagnose a business properly. It has shown that a sale is not to be seen or left as sale only but it needs to be viewed as a background function of “certain” promotion by “unit” and magnitude. Such study would thereby be helpful to inaugurate any business having no knowledge of interaction status at a given business or market place or industry. Lastly, the study would act as a guide to solve various “interaction” problems in terms of P and S, besides suggesting new ways to go on with proper proposals to several business complexity.

## CONCLUSIONS

From variables to be chosen (for P and S) to range of quotients to be selected (for equality level), the present study becomes a vital medicine to all businesses. Because, the study has explained almost all possible corners of complications, like Camacho et al., 2022; Manna et al., 2015, where an interaction should lie and make a misleading to a marketer or business accountant manager. The study has attempted to investigate and explain an elaborate description to correctly identify a cause for an effect or an effect by a cause. Not either but both are important, as the study has propounded so. Interestingly, the study has got its mathematical bases to become applied in its many major findings as explained by present study. For example, continuous P and S in the interaction must obey conditions of Fourier series. So, the study has lifted up the insights of business to mathematical concepts that are now awaiting to formulate or narrate them with interesting findings.

One of the study’s background concepts is a converse meaning of a given finding or result. This is important and equally to be maintained while calculating or applying the results or quotients by equality level of the study’s calibration model.

Like positive sign of equality level value, equality level of negative sign is equally important or implicative.

Question may come why calibration of interaction becomes required for like many business dilemmas of the nature like Hossain et al., 2015 or Buzzell, 1968 (HBR). It is related to definition what calibration by term holds to, for variability or diversity. It is scientific and may be experimental for a given set of variables to business [Nath et al., 2021; Jeong et al., 2018]. So, the present study as attempted to be meaningful ontowards satisfying the scientific validation of term “calibration”, would be also helpful to make business under a software generated operation and maintenance synchronized by its model of calibration.

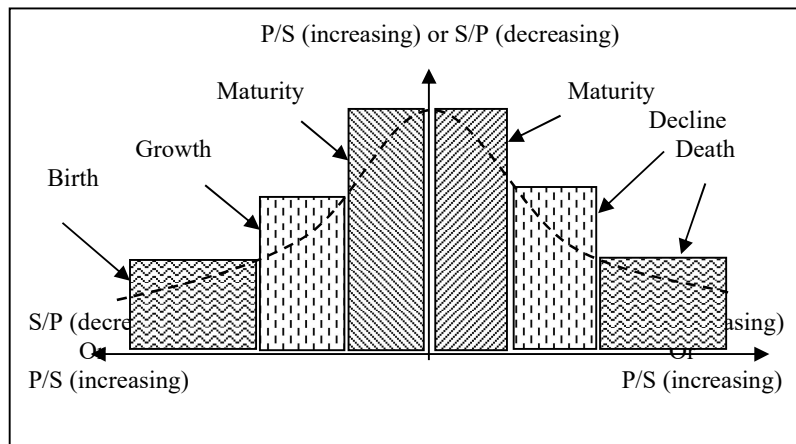
Lastly, the present study would be able to make or define the responsibility of a marketer or business maker or operator to quite easier and to flexibly lesser complex.

## APPENDIX 1 (Calibration Life-Cycle)

Once RW expressed as P/S or S/P it indicates relative meaning of sale and promotion, whether the business is sale dependent or promotion fascinated (Table A.1.1). While every business is bound to a life-cycle in its objective, each stage of life-cycle can be represented by RW as well. Conversely, RW should always reflect a stage of life-cycle. As already explained in this present study, RW can be obtained and presented in terms of discrete as well as derivative form, so Figure A.1.1 is the diagram where culmination of RW can be coincided with curve of life-cycle as well. Interestingly, lifecycle curves should be objective centric of business.

**Table A.1.1: RW and business dependency**

Sl.	Kind of RW	Expressive meaning	Explanation
1	dP/dS	sale dependent (or equivalent) promotion (=equivalent promotion)	Effect of variable sale for a given promotion
2	dS/dP	promotion dependent (or equivalent) sale (=equivalent sale)	Effect of variable promotions for a given sale



**Figure A.1.1: Diagrammatic view of RW with Life-Cycle**  
(dotted curve as life-cycle curve; blocks as life-cycle stages)

Characters of a business can be described on high or low of RW of basis nature as explained by Figure 6. Such business characters are given in Table A.1.2. A general outline by RW's implications to find out business result as good or bad is given by Table A.1.3.

**Table A.1.2: Business definition by life-cycle<sup>^</sup>**

Equivalent promotion or sale		Equivalent promotion = $\left(\frac{P}{S}\right)$	
		High	Low
Equivalent sale = $\left(\frac{S}{P}\right)$	High	Luxury, Competitive business, etc. (maturity or decline; diagonal stripes, upward or downward)	New business, Risky business, Budgetary business, Old known business, etc. (growth or decline; vertical stripes)
	Low	Consumables, Demanding, Self-suffice business, etc. (growth; vertical stripes)	Deficient business, Sloth business, Low potential business, etc. (birth or death; zig-zag Pattern)

<sup>^</sup>as represented in Figure A.1.1.

**Table A.1.3: Outcome as business character by interaction quotients using RW**

Promotion based (P/S) or Sale based (S/P)		Sale based (P/S)	
		Sale positivity	Promotion positivity
Promotion based (S/P)	Promotion positivity	usual	bad
	Sale positivity	good	usual

## APPENDIX2

### (Modeling Of Calibration)

A business may be either promotion or sale dependent. But this dependency should come in a rhythm owing to values of P and S that a business is delivered with by the interaction. So, such rhythm of interaction should never be kept aside or ignored in making a business stronger and long-lasting. So, there would be a basic magnitude of RW which should be expressed as,

Magnitude of RW = (RW by sale basis) minus (RW by promotion basis) = C.Zone quotient value.

As discrete or infinitesimal as two natures of RW, a quotient value by above equation should provide significance of business by basis of S and P. The present study has kept importance of P and S by equal emphasis for determining all possible concerns by positivity (and basis). This possible concern is to be whether P is greater or lesser than S. Either of these concerns should deliver the base of positivity of RW. There should be two possible concerns by above explanation as,

- Concern 1 - if  $P > S$ ,  $P/S > 1$ .
- Concern 2 - if  $S > P$ ,  $S/P > 1$ ;  $P/S < 1$ .



**Concern 1. Sale equivalent Promotion (P/S)**

This concern is promotion reflective or in term of promotion. It should explain a business as more promotion demanding to achieve a given sale. Conversely, unlike a sale as target, this concern should exist if a business is more concerned about promotion only continuously to marketing efforts. Following expressions must hold good to indicate this concern.

$$W = \sum_{i=1}^{\infty} P_i - \sum_{t=1}^{\infty} (S)_t \quad \dots (\text{Eq. 1})$$

$$W = \sum_{i=1}^{\infty} P_i - \sum_{t=1}^{\infty} \left(\frac{P}{S}\right)_t \quad \dots (\text{Eq. 2})$$

$$W = \sum_{i=1}^{\infty} P_i - \sum_{t=1}^{\infty} (P)_t \quad \dots (\text{Eq. 3})$$

where,

W = magnitude of RW by quotient.

P<sub>i</sub> = i-th promotion in an interaction (given).

P<sub>t</sub>, S<sub>t</sub> = t-th promotion and sale respectively in an interaction (occurred).

Subscript i and t to infinity (∞) = no. of attempt or effort which should be functional to resources like time, cost, policy making etc. Suitable adjustment by unit (Table 1) is deserved always.

As this concern is promotion intensive or promotion oriented, so sale values would represent an equivalent concern of a given promotion. Three expressions can be possible so given above where Eq.3 is P required for a given P for definitely achieving a sale which is promotion equivalent that gets checked as a result of the promotions (also consult with Table A.1.2). Subjectively, it may be by an estimation or anticipation to get value of P<sub>t</sub> with respect to S<sub>t</sub>.

**Concern 2. Promotion equivalent Sale (S/P)**

It is similar like concern 1. Here is about promotion based sale, as an effect of the promotion of occurred type. That is, the promotion occurred should relate to equivalent sale in the similar way as that of concern 1. However, the expressions would as given in following, with notations (of Concern 1) kept unchanged,

$$W = \sum_{i=1}^{\infty} S_i - \sum_{t=1}^{\infty} (P)_t; W = \sum_{i=1}^{\infty} S_i - \sum_{t=1}^{\infty} \left(\frac{S}{P}\right)_t \text{ and } W = \sum_{i=1}^{\infty} S_i - \sum_{t=1}^{\infty} (S)_t.$$

**Table A.2.1: Quotients as related to joint effect of P and S**

Sl.	Basis of RW	Positivity of RW	Kind of quotient	Expression of RW	Operator of quotient (with symbol)
1	Promotion based (S/P)	Promotion based; promotion positivity	Strong Promotion Quotient	P-S	Subtraction (-)
				P+S	Addition (+)
				P*S	Multiplication (*)
				S/P	Division (/)
2	Promotion based (S/P)	Promotion based; sale positivity	Light Promotion Quotient	S-P	-do-
				S+P	
				S*P	
				S/P	
3	Sale based (P/S)	Sale based; sale positivity	Strong Sale Quotient	P-S	-do-
				P+S	
				P*S	
				P/S	
4	Sale based (P/S)	Sale based; promotion positivity	Light Sale Quotient	S-P	-do-
				S+P	
				S*P	
				P/S	

Using such expression of RW or C.zone quotient (mentioned in Table A.2.1), we can generate profiles to

understand behavior of interaction of P and S. Term “quotient” is used to indicate flexibility to use of the value which means to any mode like percentage or fraction or any numerical expression of possibility. However, the model profiles obtained by quotient should be defined by the term “calibration” as mentioned in this present study. So, the resulting model is the *calibration model* or *model of calibration*.

For present study, model profiles have been calculated by subtraction nature of quotient. This illustrates the scope of the study as well. Table A.2.2 has shown such an illustration and it's thereby self-explanatory.

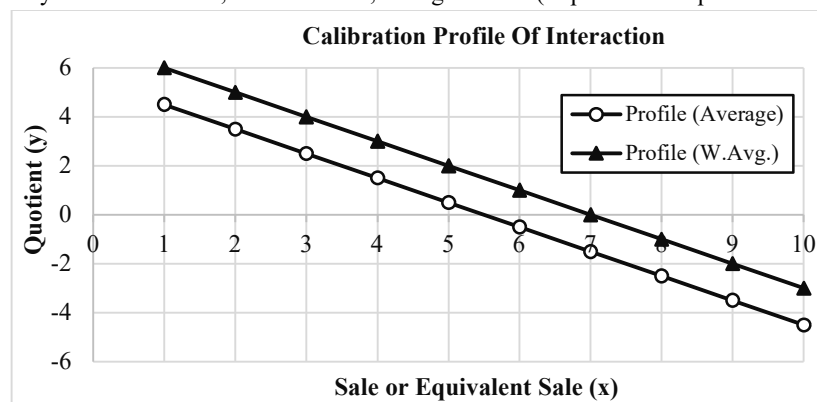
Based on values obtained for average and weighted average, profiles are hereby shown by Figure A.2.1 and model expressions of the profiles are obtained on trend-line given in Table A.2.3. Both types of trend-line are found coinciding on their corresponding nature of profiles.

**Table A.2.2: Possible profiles in Calibration Zone (C.Zone)**

Degree of P (given)	Equality Level as quotient for S or S/P (occurred) to the degree of									
	1	2	3	4	5	6	7	8	9	10
1	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
2	1	0	-1	-2	-3	-4	-5	-6	-7	-8
3	2	1	0	-1	-2	-3	-4	-5	-6	-7
4	3	2	1	0	-1	-2	-3	-4	-5	-6
5	4	3	2	1	0	-1	-2	-3	-4	-5
6	5	4	3	2	1	0	-1	-2	-3	-4
7	6	5	4	3	2	1	0	-1	-2	-3
8	7	6	5	4	3	2	1	0	-1	-2
9	8	7	6	5	4	3	2	1	0	-1
10	9	8	7	6	5	4	3	2	1	0
<b>Determination of components of model</b>										
Avg.	5	4	3	2	1	-1	-2	-3	-4	-5
W. Avg.	6	5	4	3	2	1	0	-1	-2	-3
Variance	2843	2956	3072	3189	3309	3432	3556	3683	3812	3943
Standard Deviation	53	54	55	56	58	59	60	61	62	63

^W. Avg. = Weighted Average; Average = Avg.; equality level = [P(or P/S) minus S (or S/P)]; negative sign incorporated into calibration model and it marks the RW value (sale) by relative potential of P and S.

The model so obtained is applicable for both the Concerns and their related equations. This model should signify to a level of equality between P and S, on interaction, for a given sale (or promotion equivalent sale) to be achieved.



**Figure A.2.1: Equality level of RW (Calibration Model Profile)**

**Table A.2.3: Calibration Model Expression**

Profile of RW (or Equality)	Linear	Polynomial
Avg.	$y = -x + 7; R^2 = 1$	$y = -1E-16x^2 - x + 7; R^2 = 1$
W.Avg.	$y = -x + 5.5; R^2 = 1$	$y = -x + 5.5; R^2 = 1$

^please see Figure A.2.1. for notation x and y.

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