



INTENTION TO PAY

exploring Credit Risk beyond ratings



The ability to pay is often measured using Credit Scoring models as standard credit practices. However, the expertise of knowing when and why people are honest will improve lending practices, be it for determining a transparent borrower profile or collections as a #gamechanger in realtime!

People excellence indicator analytics



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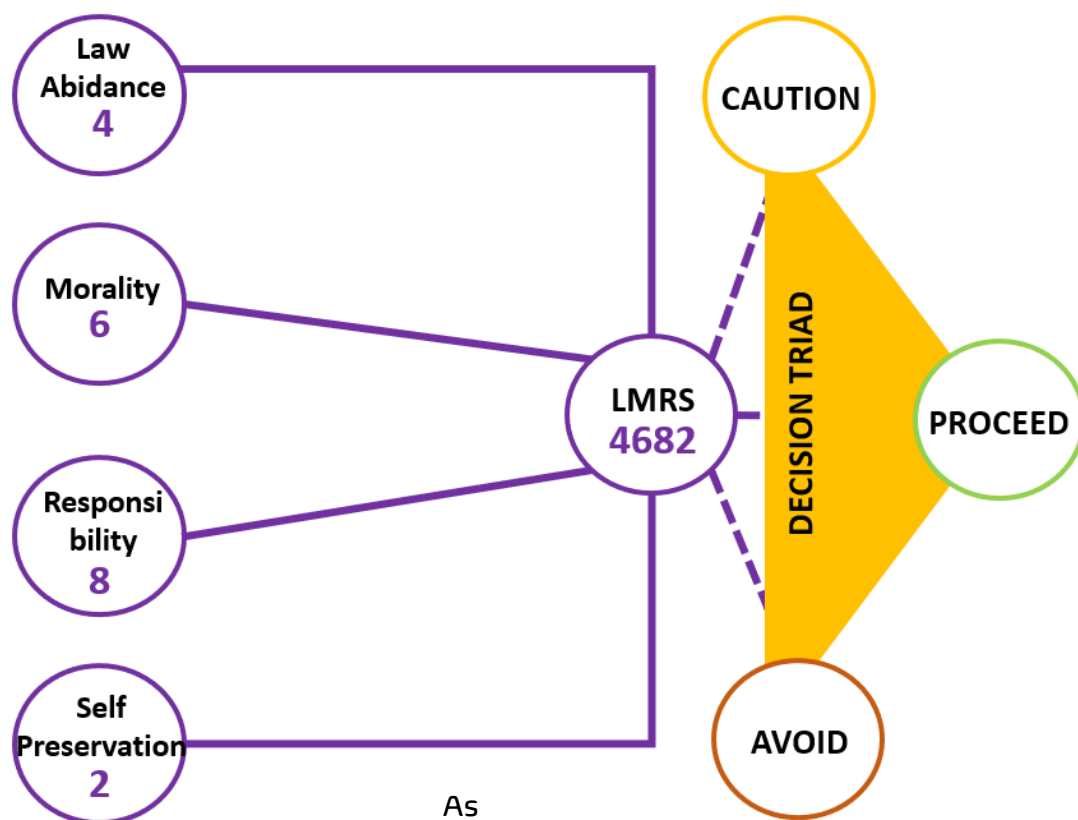


Overview

While every human responds to selective behavioral patterns, not everyone can access loans. If we begin our discussion from this simple understanding, the importance of using psychometrics along with lending principles combined as a fortified solution become self-explanatory.

As an Indian entity without the legacy of Psychometric types and frameworks, Pexitics has had the advantage of being able to adapt the best from previous and practiced psychological tools and re-create that which can be best adopted to understand human behavior metrics. Most personality type indicators themselves claim a 33% accuracy to the job role and suggest looking at further indicators. This is true as we too believe that a personality type is not a complete picture; we forget cognitive ability, we forget understanding intelligence and we forget cultural fitment and functional skills. And all of them matter for a full scale understanding of behavior.

This is our first brief summation.



As we try to find fortunes at the bottom of the pyramid, we will encounter a lowered availability of 'ability to pay' scores in the form of credit ratings and investigate for 'Intention to Pay' for reaching 'New to Credit' individuals and increase our bases while maintaining an optimal control over both credit risk and lending principles to ensure sustained growth.

What is the best orientation hence? Read ahead to know more about 'Itpy'!

ItP Q12 Framework (spelt: It-py)

The ItP Q12 framework borrows its name from 'Intention to Pay' where we pose 12 simple questions to assess borrower behavior behaviour logic across the 4 quadrants using a Survey methodology.

The scores are recorded as interaction axioms stored as LMRS nodes for creating clusters to denote efficacy of behavior as part of Credit Risk modelling for;

enhancing access to new markets
lowering of Credit Risk and default
creating borrower behavior profiles



All creatures in nature are self-preservationists by default.

Sentient beings like humans are however situationally honest, based on the need, the outcome and classical orientation through family and social values adapted since birth.

It is for these reasons that one needs to measure the orientation to understand the persona, rather than trying to measure honesty.

Morality

Ethics or our inner moral drive to be honest can be the highest level of honesty where one is honest for believing in the power of honesty itself. Individuals with high morality scores are more humane and empathetic of others. *Morality is a value we highly cherish in others, but rarely practice ourselves.*

Self-Preservation

This is the dimension where survival is involved or when we seek to avoid taking positions or responsibility, and hence it is diametrically opposite to responsibility as an orientation. High Self-Preservation scores might denote a self-oriented dimension or refusal to take part in risky roles and invoke harm as a fear.

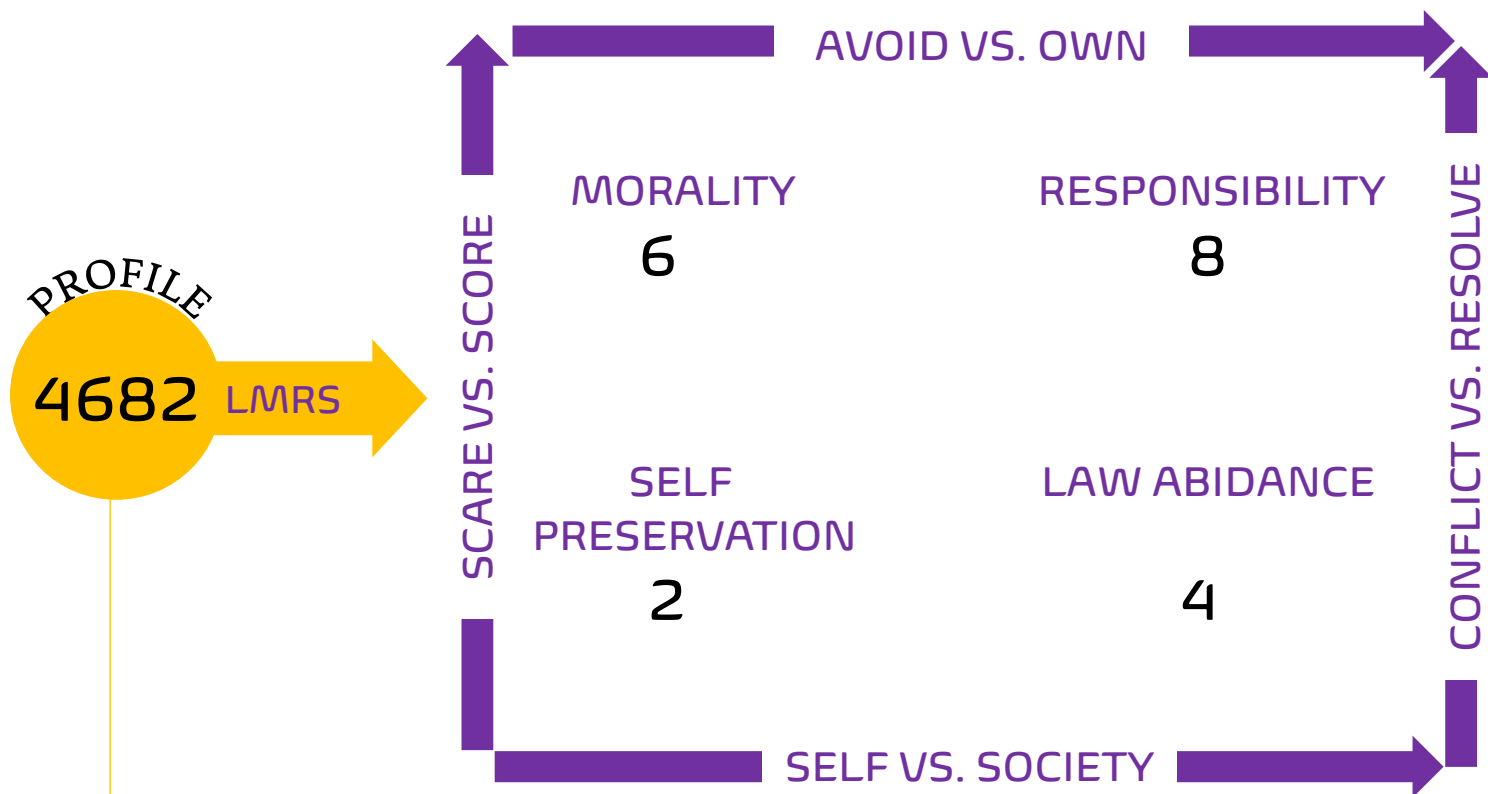
Responsibility

We try to be honest with our children or our bosses, as we believe it is part of the value which the role demands. High responsibility shows high fitment Responsible honesty is situational and based on the importance of honesty as contained within the role *as a dimension of performance, be it a leader or worker.*

Law Abidance

High law abidance scores denote a good citizen, an excellent subordinate. Their loyalty lies with legality and policy, which forces them to be honest. While this is diametrically opposite to morality where one is ethically honest, law abidance highlights fear and/or respect for the law and forces one to be technically honest.

ItP Q12 | How it works

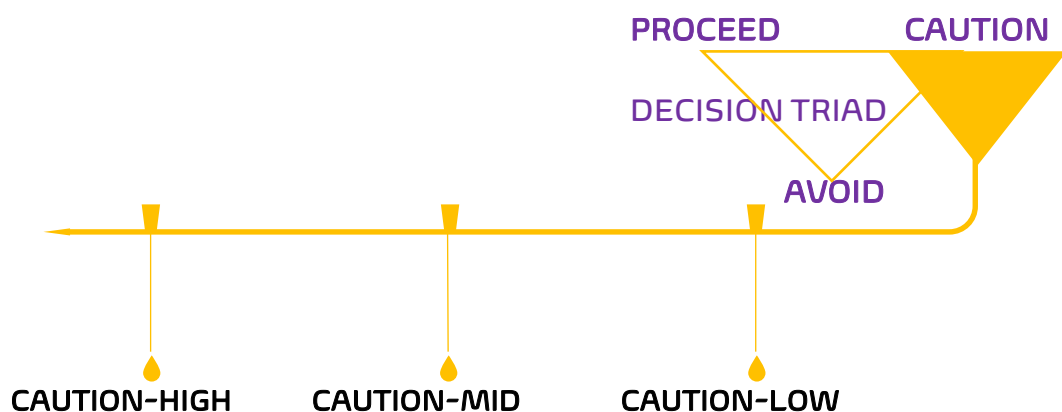


It is possible that two or more people have similar scores, leading to same LMRS Node

If LMRS Node (4682) is exclusive for Non-Delinquent (NonDel) clients, it is a **PROCEED**

If LMRS Node (4682) is exclusive only for Delinquent (Del) clients, it is an **AVOID**

If LMRS Node (4682) is common for both Del & NonDel clients, it is a **CAUTION**



Compared to Credit Rating scores, the Decision Triad can further be utilised for;
Build local control levers of borrower inflow towards;

- Cross-sell or introduce new products using control levels across borrowers
- Increase or decrease quality by tapping into multiple CAUTION buckets
- Insert differentiated pricing based on CAUTION levels
- Enter newer markets based on CAUTION levels

Benefits

The Survey is hosted on Pexitics assessments and survey platform **Pexitest.com**

Applicable for;

Personal loans

Microfinance loans

Study or education loans

SME loans to small and medium enterprises

Any individual loan plus employee risk profiling

We convert the findings into an algorithmic decision triad.

PROCEED | **AVOID** | **CAUTION** (High : Medium : Low)

- The CAUTION decisions can be calibrated based on weighted average.
- The questions are translatable into any regional or international language.
- The responses provide real-time decision.
- The survey can be taken on a smartphone.
- The profiling can be used during collections.
- All data available on a real-time Dashboard.

The Framework uses analytics to reduce delinquency on an on-going basis as it integrates borrower performance with weighted calibrations to further improve profiling as a continuous benefit to financial organisations.

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PEXACT0222959

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AssessmentCode Count

AssessmentCode	incomplete	complete	TotalCount
PEXADM0222851	0	0	0
PEXACT0222959	10	40	50
PEXCOM0222227	40	30	70
PEXOTH0122848	0	0	0
PEXOTH0122409	0	0	0

Search:

FullName	Email	AssessmentDate	Law Abidance	Morality	Responsibility	Self-preservation	Advisory
ANILKUMAR B T	ANILKUMAR584302876000@Pexitics.com	28/02/2022	75	28.6	40	41.7	Caution
BAL PATEL	BAL417842400185@Pexitics.com	26/02/2022	75	21.4	63.8	32.5	Proceed
Balak das	Balak775993708652@Pexitics.com	26/02/2022	87.5	33.3	79.2	14.6	Proceed
BASAVARAJ VANAGERI	Basavaraj561030238433@Pexitics.com	26/02/2022	45	75	43.3	25	Avoid
Bhagwat singh	Bhagwat319480778221@Pexitics.com	26/02/2022	75	41.7	80	21.2	Proceed
ganesh radheshyam	ganesh880036174493@Pexitics.com	26/02/2022	60	20	71.4	29.5	Proceed
Gnanaraj Sadacharam	Gnanaraj974545556181@Pexitics.com	26/02/2022	55	37.5	80	22.5	Proceed
Gudyappara siddappa	Gudyappara621168705572@Pexitics.com	01/03/2022	68.8	46.4	37.3	35.4	Caution
Haleshappa P	Haleshappa390749781188@Pexitics.com	01/03/2022	60	50	46.4	27.5	Caution
Jagan Yadav	Jagan425871956950@Pexitics.com	26/02/2022	60	33.3	66.7	27.3	Proceed

Showing 1 to 10 of 43 entries

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Reliability & Validity

CONSISTENCY | RELIABILITY | HOMOGENEITY || The three core standards

These three terms are not only important but what is most read and heard about in an assessment validation report. Consider this; if you went to a restaurant and ordered a dish, you shall also seek the same standards.

Consistency: Consider, certain foods are well cooked while a few tougher ones remain uncooked. Consistency can also be of textures, being equally hard or soft, depending on the dish, across all the areas or layers of the dish.

Reliability: This is the factor that makes promise a promise. A simple example here is the fact that most olive oils sold do not contain 100% olive oils. Or most ice-creams are not made of cream. Reliability is when you get what you are promised. In a restaurant setting, it is that promise; the meat or vegetables are as they have been explained or written about, and nothing else.

Homogeneity: This is the easiest to explain. It is the equal portion of saltiness, spiciness or sweetness in every bite.

Now that we are done with the meals, let's get into some serious stuff.

V A L I D I T Y	CONVERGENT: Are the concepts in convergence with similar agencies?
	CONCURRENT: Do the results measure similar across different sets or instruments?
	PREDICTIVE: Does it predict with high accuracy what it was intended to predict?
	CONSTRUCT: Is it possible to draw clear insights from the measurements?
	TESTIMONIAL: Has it been found effective by users with similar needs?

Consistency is validating what works in the primary interest of the organisation. However, it is also true that instruments like ours become more effective when we both come together in a concerted effort to put things into work. It is like one more of the restaurant examples we can't wait to share; the passion put into cooking can only be experienced with an equal passion for eating. Instruments come into their full capability when the data emerging from it is used to deliver further decisions that make the experience easier, the results more accurate and feedback that results into finer qualifications into the scoring methodology.

When we talk about reliability, we seek organisations to create their own benchmarks rather than insisting on fixed standards, which often are not accurately predictable for every organisation.

A reliable instrument is one which is used across all levels within the organisation to ensure that not only is everyone measured on a single yardstick, but the capability also to move faster within the organisation is being based on measurements that have been used for all levels, thus making it more reliable. Just like in sports, the factors which increase have a unipolar improvement over the same yardsticks and laws of measurement. A 100 metres sprint and a 500 metres race use the same stopwatch. Else, measurements would be flawed.

Kindly go through the FINDINGS for actual study of our **ItP Q12** in grading of borrower risk.



“There is enough on this planet for everyone's need, but not for everyone's greed.

Mahatma Gandhi

Findings

In March 2022, we surveyed 661 borrowers spread across 65 locations into 2 unsecured product lines, namely MFI & IL loans. Our surveys operated in a staged manner with MFI followed by IL loans with a healthy mix of delinquent and non-delinquent borrowers.

		LOAN I	LOAN II	REVISED
	ACCOUNTS	545	116	661
	LMRS NODES	252	94	296
	PERCENT	46%	81%	45%
REVISED		LOAN I Del	LOAN I NonDel	COMMON
	ACCOUNTS	104	441	195
	LMRS NODES	77	221	46
	PERCENT	74%	50%	24%
I vs. II	LOAN I VS. LOAN II	DELINQUENT	NON-DELINQUENT	COMMON
	LOAN I ACCOUNTS	26	126	74
	LOAN II ACCOUNTS	23	66	21
	LMRS NODES	18	49	17
DECISION	COMPARATIVE I vs. II	COUNT	NODES	COMMON NODES
	AVOID	0	0	
	CAUTION-HIGH	2	2	2
	CAUTION-MID	17	13	15
	CAUTION-LOW	4	3	4
	TOTAL	23	18	21

Analysis & Insights

Loan I had a total of 545 accounts, out of which 104 were delinquent and 441 non-del accounts. Loan I had 252 Nodes out of which 74 were Del Nodes while 221 nodes were non-delinquent. Loan II had no delinquent accounts, and a total of 116 accounts spread across 94 nodes. Loan I had 46 Common Nodes, meaning that the Nodes contained both del & non-del accounts. The total delinquency was observed at **15.7%** of the portfolio accounts.

Adding Loan II data into the pool totaled the accounts count to 661 across 296 Nodes. The percentage of Nodes across the accounts reduced to 45% when merged into a single ac pool.

The accuracy in Loan I was at **95.3%** as the account contained both Del & Non-Del accounts. Matching the Loan II to Loan I Nodes provided for **83.6%** Decision accuracy with no Del accounts. 19 accounts are suggested to be in risk combining the CAUTION-Mid & High counts for Loan II.

A total of **65 locations across 7 states** were covered under this analysis. There were 21 locations which had 0 del accounts and Loan II could be introduced. Only 5 locations in Loan I had Common Nodes compared to overall 17 Nodes covering 9 accounts. This validates the conjecture of **locational decisioning to reduce Credit Risk and increase reach**.

Please contact us for more details on the findings and further additional insights.

Psychometric summary



How does the ideal borrower profile look?



LAW ABIDANCE
Mid & High Scores



MORALITY
Mid & High Scores



RESPONSIBILITY
Only High Scores



SELF-PRESERVATION
Only Low Scores

The ideal borrower who would least likely default should have the above kind of scores;
High scores in **R**, Mid & High scores in **L** & **M** & Low scores in **S**.
Combinations with **L**(Mid & Low), **M**(Low), **R**(High) & **S**(Low & Mid) shoot the del %age to 24.7%

The approach for an organisation can be multipolar or unidimensional; it could focus on lowering default by weeding out axioms which trigger any chance of default or focus on arriving at an optimum state where the loss of overall borrower profiles is adjusted to a focused delq %age.

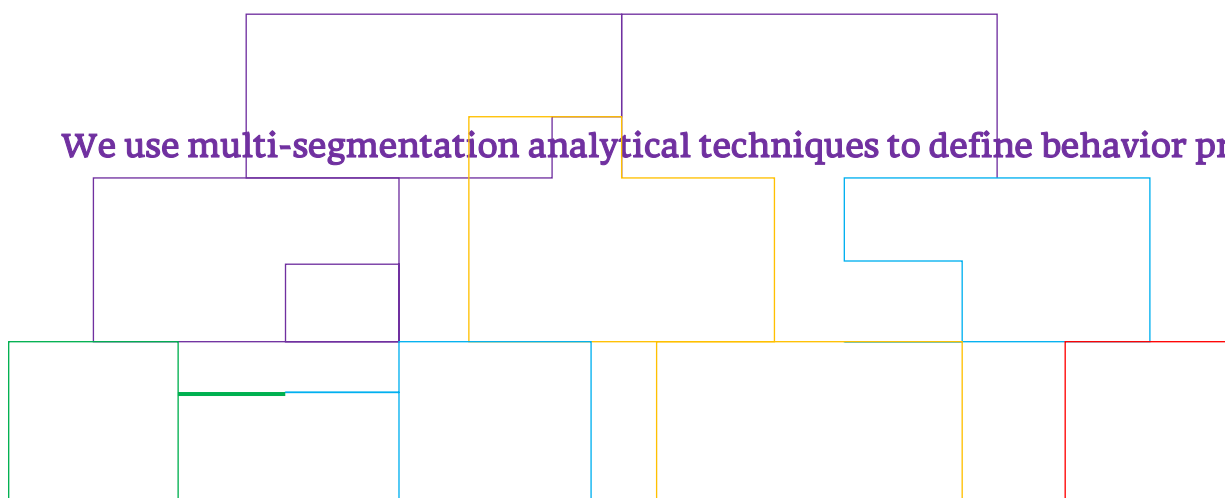
How accurate was our Recommendation Algo?

		DECISION TRIAD	
		0	1
ACTUALS	0	450	18
	1	7	58
AVOID+CAUTION-H		0	
PROCEED_CAUTION-L		1	

ACCURACY: Total Right decisions
PRECISION: Total AVOID decisions
SENSITIVITY: Accuracy for Total Positives

ACCURACY | 95.3%
PRECISION | 76.3%
SENSITIVITY | 89.2%

We use multi-segmentation analytical techniques to define behavior profiles



Implementation

The ItP Decision Triad aims at supplementing the existing Credit lending policy

CREDIT RISK POLICY

ItP Q12 DECISION TRIAD	LOW	MEDIUM	HIGH
PROCEED	PROCEED UPSELL	PROCEED	RATE TENURE LOAN AMOUNT
CAUTION-LOW	PROCEED	PROCEED	RATE TENURE LOAN AMOUNT
CAUTION-MID	PROCEED	RATE TENURE LOAN AMOUNT	AVOID
CAUTION-HIGH	RATE TENURE LOAN AMOUNT	AVOID	AVOID
AVOID	AVOID	AVOID	AVOID

How you should use the ItP tests

The ItP test simplifies the concept of Intention to Pay; it needs to be understood as an application from the concept of behaviorism compared to the scoring algorithm to determine ability profiling.

Benchmarking your data

While the individual is being scored, they are being collated into a demographic group to ascertain whether the scoring model has been accurate in profiling the risk behaviour. This is based on responses and comparison of scores with prior data.

However, the kind of profiles attracted would vary from one organisation to another based on their internal risk models, the marketing and locations and the existing screening and sourcing pools.

Analytical modelling involves pooling the individual into demographic clusters, making uneven comparisons, which could lead to inconsistency, as observed by us over our years of research into people behavioral data.

This brings in the perspective to organize internal benchmarks prior to embarking on application, wherever possible.

Difference with competitive models

While we do not claim to be exclusive or the first mover in this space, we have observed and also gained insights from users of competition models and found the gaps to address them for leaks and variable potential.

Most models can be cloned due to limitation of randomisation of questions as a first step to eliminating cloning. Our randomisation ensures there is a rarest of rare chance of receiving the same set of questionnaire to understand and game it.

Our scoring approach also includes negative scoring to ascertain sincerity of the user alongwith the possibility of proctoring (in case of user-driven administration) to identify the user and the applicant are the same person.

The most interesting part however lies in the type of questions asked and which is our proprietary domain to determine the perspective while avoiding straight and standard answers to obvious questions. Our question pools have earned respect through this 98% accuracy of personality prediction by posing simple yet unobvious questions to ensure the user is not posed with affirmative but situationally relatable questions which help establish the mindset and approach to draw from memory to determine the profile.

We can implement the LMRS using the Decision Triad on a direct basis, where there might be zero scope to conduct a benchmark, eg., a new portfolio or product or new geography initiation.

Without delinquent data, the accuracy falls by an estimated 8% vis-à-vis actuals. This can be further thwarted by an early calibration at the end of 3-6 months of business. Internally, we seek delinquency data on a monthly basis to make ML algorithm alignments as we understand that product and locational influences might make the accuracy vary by a few basis points.



With respect to application fraud

While we do not disagree that an application cannot be gamed, we have in-built technological and process controls alongwith unique practices to reduce it almost zero.

Adhaar-based login: This ensures borrower uniqueness. A repeat Adhaar borrower can retake the Survey only after 6 months from the last Survey session. This also rules out any scope for us as an organization to access and sell borrower data to any third parties.

Proctoring Solutions: We have image proctoring solutions to capture the applicant image at timed intervals for verification of the applicant and the borrower being the same person.

Real-time results: The Decision Triad is based on ML algorithms which generate real-time decisions for stakeholders to rule out any manual interventions in decision generation.

Proprietary Algo: While standard Big Five are often used to game the system, ours is a proprietary question bank and framework which measures responses at both ends of the Likert Scale to rule out any scope for gaming the responses.

Weighted calibration: The Caution benchmarks can be set at a weighted calibration, allowing wider flexibility with centralized control to ensure only key stakeholders are in knowledge and control of the weightages and levels set for localized efficiency.

Secure technology: Our assessments and surveys platform Pexitest.com is a secured website hosted on Microsoft Azure, providing highest server protection.

Experience-led maturity: Pexitics has been in the space of people assessments since 2017, proving its experience and prowess with large, listed entities as clients to vouch for its domestic and global credibility.

Conclusion

McKinsey & Co in its article '*All in the mind*' suggests organisations to debias themselves from business risks using the power of psychology and analytics. We recommend the suggestion with our offering of customer behavior 'Intention to Pay' ItP Q12 questionnaire.

Being a psychometric profiling survey, the applications are widespread. One of the best cases happen to be the application of ItP Q12 for employee profiling, which is an equal risk for financial organisations and banks.

While this knowledge might be great as a purveyor of honesty, the applications can also be very interesting.
Are you hiring for a role where honesty is a precondition?
Is honesty a part of your transactions like transportation or retail business?
Is law abidance a part of ethical practice for select positions like Board members?
Are you dealing with high-value risks as in defence secrets and hence honesty is an a priori?
Do you deal with sensitive information or cash to preclude honesty like banking and loans?

With minimal changes, the Itpy framework also finds applications beyond credit risk and thus is another validation of its universal appeal and validity.

Increasing AUROC as a business goal

For a business-sensitive Risk Manager, constant vigilance to increase the **Area under Receiver Operating Characteristics Curve** delivers better optimised performance by higher confidence on determining that a 0 is a 0 while a 1 is a 1. The emphasis on increasing the **AUC** (Area under the Curve) thus not only improves volume, which is a demand for business, but marginalizes the level of error or bad borrowers using advanced practices like psychometrics to eliminate the losses.

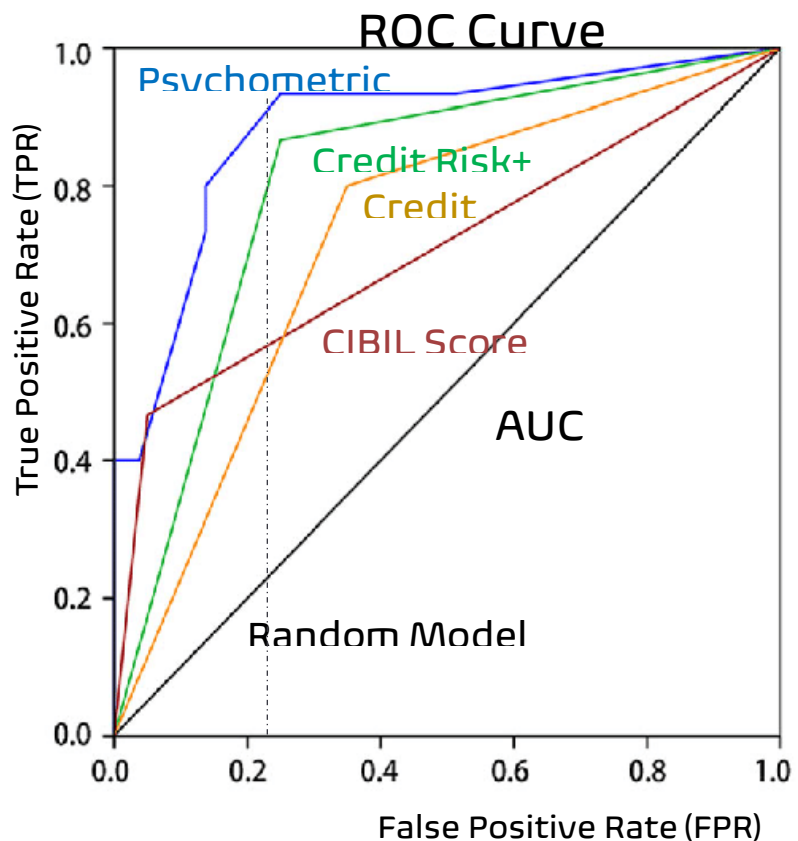
TPR call be measured as **Recall** or **Sensitivity** where

$$\text{True Positive (TP)} = \frac{\text{True Positive}}{\text{True Positive} + \text{False Negative}}$$

while **Specificity** is measured as

$$\text{True Negative (TN)} = \frac{\text{True Negative}}{\text{True Negative} + \text{False Positive}}$$

Our Sensitivity score was 89.2% (see Pg 10), bringing forth a higher confidence in the ItP Decision Triad as an AUC increasing tool.





DETERMINE
THE PROBLEM

MEASURE
THE DATA

UNCOVER
THE INSIGHTS

Reach us if you are a financial organisation seeking to measure your borrower's
Intention to Pay. Today.

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Subhashini | subhashini@pexitics.com