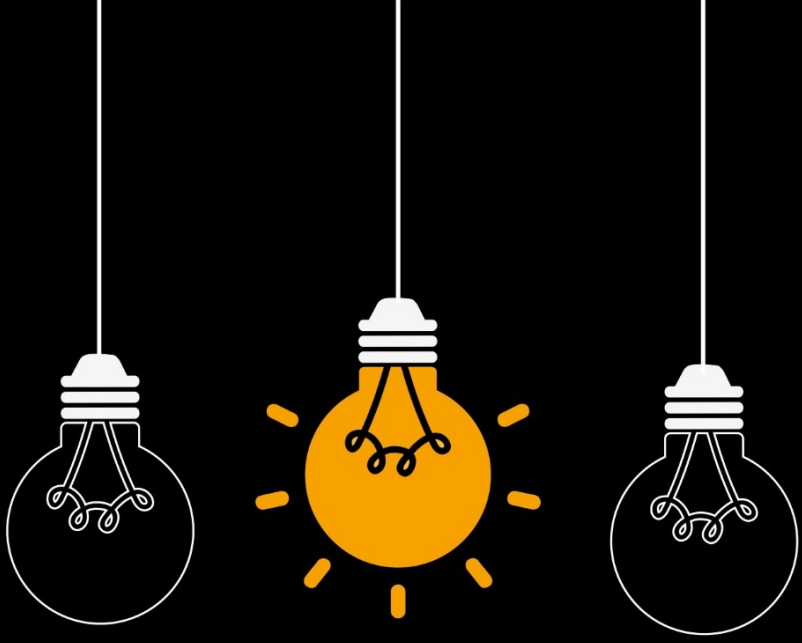


Learning by Solving

EDITOR
PROF. POOJA GUPTA

JAGSoM
JAGDISH SHETH SCHOOL OF MANAGEMENT
AACSB ACCREDITED

Select White Papers Volume 2 | 2022

LEARNING BY SOLVING:

SELECT WHITE PAPERS VOLUME 2

2022

Editor:

Prof. Pooja Gupta

EDITOR

PROF. POOJA GUPTA

Assistant Professor &
Faculty In-charge – Research and Case Development
Jagdish Sheth School of Management (JAGSoM)

ISBN: 978-93-5627-299-66

Book Design: Design Studio, Vijaybhoomi School of Design

TABLE OF CONTENTS

Editorial: Learning by Solving – Impacting Business through Experiential Learning

PROF. POOJA GUPTA

Assistant Professor & Faculty In-charge – Research and Case Development

"The only source of knowledge is experience" – Albert Einstein

John Dewey, American Philosopher, believed that learning comes from doing. He propounded the theory that students must interact with their environment to adapt and learn. This pedagogy of experiential learning has become endemic in Business School curriculums. We are proud to say that JAGSoM - Jagdish Sheth School of Management is one of the first Business Schools in the country to institutionalize this pedagogy of 'Learning by Solving,' where faculty and groups of participants partner to solve real-life business challenges of Corporates. This initiative is known as Request For Problem (RFP). Through RFP, we seek real-life business problems from Corporates where participants identify alternative solutions to a business problem, resulting in superior learning for the participants and practical solutions for corporates.

This was our second year of RFP initiatives. It was executed by the PGDM students of the 2020-2022 batch. Our students and faculty members worked on multiple projects across MarTech, FinTech, Banking, Capital Markets, Analytics, and HR with Corporates to develop implementable solutions.

We are proud to showcase this Edited book titled ‘Learning by Solving: Select White Papers Vol. 2’. This Edited Volume is a compilation of select White Papers that have arisen out of the RFPs carried out by the PGDM Batch of 2020-22. The White Papers have been written jointly by students and faculty members. The names of some of the Corporates involved in the RFPs have been withheld for confidentiality reasons. We want to thank all the reviewers for the effort and time they put into reviewing the White Papers and giving valuable suggestions.

The first White Paper in the series talks about building a Human Resource Artificial Intelligence (HRAI) Maturity Model. The model integrates HR analytics with Artificial Intelligence. It endeavors to optimize the introduction and execution of HRAI strategies to improve HR and Business performance concurrently.

The second White Paper talks about how Fintech companies identify the needs and requirements of the target segment of customers. The project was given by Loantap – a leading Fintech company in the lending area that wanted to understand the persona of prospective borrowers. This was required to develop the market and identify the company's customers for Electric 2 Wheelers.

The third white paper focuses on understanding and analyzing the purchase behavior in the milk market in the e-retail segment. The e-retail is a growing phenomenon in the retail business, and consumer behavior and penchant toward e-retail are changing. This project helps the student identify the factors critical to the customers while buying daily essential products from e-retailers. The project was facilitated by Big Basket.

The fourth White Paper applies a Convolutional Neural Network (CNN) to detecting and recognizing food images. The project tracked a grocery retail store and identified the stockout items from empty shelves. The company wanted to use pictures to identify the item SKU vacancies to fill racks and request a refill from the respective departments. The team used deep learning algorithms for computer vision for this purpose.

The fifth White Paper talks about the Digital origination and onboarding of MSME clients. In India for Business loans. The project looked at how the customer experience of MSME could be enhanced by using new technologies while they apply for new loans to finance companies. The project was facilitated by Edelweiss Finance.

The sixth White Paper looks at the luxury housing market in India. The project focuses on identifying the amenities preferred by the affluent customer segment by developing a desirability index. The Desirability index is built by placing the relative importance of the amenity category over other categories and by ranking an amenity and its usefulness. The project was facilitated by Adarsh Developers.

We hope that this Edited Volume will be helpful for Practitioners and Practicing Managers.

Please share your feedback and suggestions at:
ri.academics@ifim.edu.in.

ABOUT THE EDITOR

PROF. POOJA GUPTA

Assistant Professor &
Faculty In-charge – Research and Case Development

Prof. Pooja is an educator, case writer, and researcher with more than 16 years of teaching experience at the postgraduate level.

Her research interests are in the area of Corporate Finance, Corporate Governance, Behavioral Finance, and Education. She has presented her research work at various National and International conferences. Prof Pooja is a prolific case writer and has received various national and international awards for her cases. Her cases have been published by Ivey Publishing and are available through Harvard Business Publishing. She is a reviewer of reputed national/international journals.

Prior to joining Jagdish Sheth School of Management, she was associated with Symbiosis Institute of Business Management – Bengaluru and Amity Global Business School.

BUILDING AN HUMAN RESOURCES ARTIFICIAL INTELLIGENCE MATURITY (HRAI) MODEL

MIDHUN N
NIVEDITA CHOUDHURY
NEHA TEWARI

INTRODUCTION

The idea of HR 4.0 is inextricably linked to Industry 4.0, or the fourth major industrial revolution. If Industry 4.0 represents the integrated use of digital technologies, the term is only a harbinger of the commencement of such integration, not the end state. Data exchange between systems has dramatically expanded efficiency and decision-making processes in people management. More prolific changes are awaited. Perhaps Industry 4.0 will give way to Industry 5.0, replete with AI integration. At this juncture, it is apt to assess whether we have embarked upon the journey and how far we have traveled in the AI integration to have a beacon to navigate this inevitable, exciting, and challenging journey. We embarked on this research to unlock a framework for assessment focusing on the HR domain.

OBJECTIVE

The objective of our study was to design an HRAI maturity model.

WHAT'S A MATURITY MODEL?

It is a metric to measure the progress of our journey in any field. Though the term maturity model was initially associated with IT and the level of IT adoption and integration into the business realm, the maturity model concept has proliferated in many fields. Maturity models are like milestones in a journey. HRAI is no different. HRAI maturity model helps an organization

assess itself and make changes in the direction and speed of the HRAI adoption and by default benchmark.

WHAT DO WE KNOW SO FAR?

Any design needs to keep in mind what has been done so far. Our search for an HR AI maturity model included poring through over 200 research articles and the work of many industry experts. While there are many intellectual outputs of AI, there is little study on a maturity model. The nearest that one comes to is the People Maturity Model and Gartner's generic AI maturity model. What emerged from this investigation are:

Data and analytics are the heart of AI. Patterns that emerge from the analytics need to be the first steps to teaching AI to think, much like a child learns to walk. Hence it is prudent to look at HR Analytics Maturity Model first.

Though there are many maturity models, they generally have four stages.

- Stage 1 is reporting data using a digital medium,
- Stage 2 is finding out simple metrics such as attrition rate or cost per hire and then benchmarking,
- Stage 3 is the use of data for strategic decisions, and
- Stage 4 uses data for predictive analytics, such as predicting attrition. These are human-driven actions using simple tools such as R or SPSS.

AI, on the other hand, should work on three clear stages:

- The first stage is Assisted Intelligence, which can give some input on its own but needs human intervention.
- The second one is Augmented Intelligence capable of doing pretty complex work independently.
- The third is Autonomous Intelligence capable of self-learning (machine learning and deep learning) by harvesting the human interventions done in the first two stages and creating an algorithm that mimics and betters the intervention logic.

Hence while using the People Analytics Maturity Model (PAMM) is helpful, it falls short of a model for HRAI.

Gartner has an AI maturity model built in five stages.

Stage 1 is Early AI, often with a lot of hype,

Stage 2 Experimentation in data science,

Stage 3 use of AI in production and process innovation,

Stage 4 use of AI in disruptive innovations, and

Stage 5, in which AI is part of business DNA.

Not only is the model generic and not HRAI specific, but also inadequate in indicating how much of your work should be done by AI in each stage. Because of this deficiency, there is considerable difficulty in gaining insight when the model is applied and tends to be abstract. More importantly, its use for assessing function-specific AI (HRAI), in this case, is limited.

After studying the models explained above, erudite articles, and identifying the limitations, we decided to hit the ground and get a feel of the AI usage from Subject Matter Experts (SMEs) or those on the ground. After the initial discussion with the experts to get their view of HRAI maturity and how they assess it, we invited them for a webinar with nearly 200 participants, which enabled us to harvest more ideas and input from a more significant diaspora of experts. We were able to milk many views and feedback from the panelists and participants during the webinar and through the post-webinar survey.

The researchers realized that there is a paucity of information on what should be the criteria for a good maturity model. We decided it is essential to determine this and then create the HRAI. Many start-up companies are on a gold rush for the HRAI pie from anyone who would listen to their stories. This convinced us even more that there should first be a criterial framework so that we can design an HRAI maturity model more scientifically.

We arrived at the criteria for creating a maturity model by integrating expert opinion and our research.

Criteria for a Good Maturity Model
Theoretical rooting.
Seamless Entry and Transference of Stages.
A balance between flow and discreteness.
Function-specific.
Applicable across businesses (size and sector).
SMART (specific, measurable, attainable, realistic, and time-bound) vs. abstract.
Simplicity (in understanding and application).

Once we had the criteria, we built a robust maturity model.

WHAT EMERGED

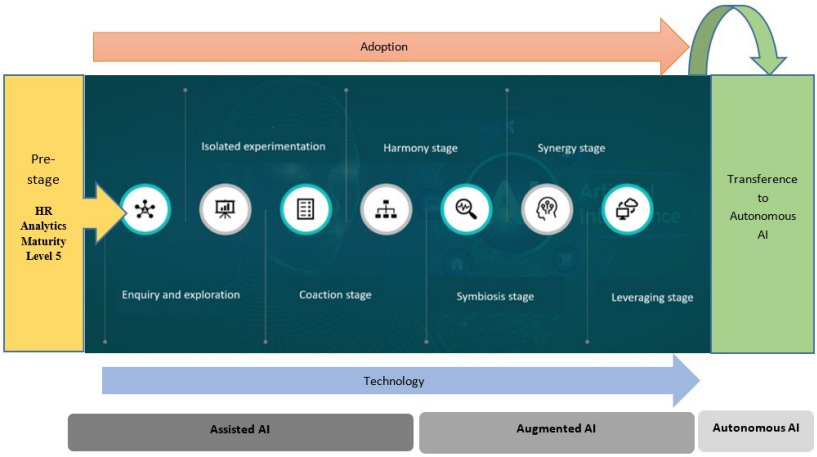


FIGURE 1: HRAI MATURITY MODEL (DESIGNED BY RESEARCHERS)

WHAT ACTIONS AND TIME IS REQUIRED FOR EACH STAGE?

Table I below indicates the actions and flexible time lags to cater to

Stage	Name	What one expects to see	How long should you expect it to take?
1	. Inquiry and exploration	Asks people, and experts, finds out details, research, does some courses, discusses in meetings and forums and strategy meetings ending in a decision to implement.	In one year (is a fair time)
2	Isolated experimentation	Experiments and finds out analytics is wanting and so falls back to refine analytics. The use of AI is isolated in some functional areas, using a BOT for TA.	In about two years from the start
3	. Coaction stage	Some sub-functions are integrated. At least 40 to 50% of the functions of a function such as TA are AI-driven.	Four years is a good bet.
4	. Harmony stage	70% of the value is created by AI operations within and across the function. We are arriving.	In 5 years
5	. Symbiosis stage	20 to 30 % of interdepartmental integration is achieved.	In less than six years
6	Synergy stage	Uses deep learning to recommend business partnering activities. Interdepartmental integration rises to about 50% of the activities.	Seven years should be a good target.
7	. Leveraging stage	AI recommends business opportunities. AI is rational and quasi-emotional arguments by integrating various functional areas of management.	8 to 9 years once you start

TABLE 1: PRIORITISATION OF BUYING CENTRE MEMBERS

HOW DO THE CRITERIA STACK UP?

To establish the relative priority of the criteria, the researchers used Analytical Hierarchy Processing (AHP). See the Results below (Table 2). 45% of the weight should go to Seamless Entry and Transference; else, it will be a resource-wasting seesaw. Others are represented by approximately 10% weight.

Cat		Priority	Rank	(+)	(-)
1	Theoretical rooting	10.7%	4	10.3%	10.3%
2	Seamless Entry and Transference of Stages	45.0%	1	23.9%	23.9%
3	Balance between flow and discreteness	10.7%	3	8.6%	8.6%
4	Function-specific	10.5%	5	10.1%	10.1%
5	Applicable across businesses	11.0%	2	8.8%	8.8%
6	SMART	7.4%	6	9.6%	9.6%
7	Simplicity	4.8%	7	3.2%	3.2%

TABLE 2: PRIORITIZATION OF CRITERIA USING AHP

WHY IS OUR HRAI MODEL UNIQUE?

We recommended an inbound marketing approach that pivots on leading prospects to the website by looking at the project objectives. For this purpose, we proposed the following channels:

Seamlessness. The Pre-stage indicates the seamless entry into the AI drawing its strength from HR Analytics maturity. The research team's findings that without mature and robust HR Analytics, the AI would be like a house

built on sand; perhaps it will stand but after continuous interventions to make the analytics strong, leading to seesaw movements that violate optimization. AHP also bears this out. We preferred to confine the model to two levels of AI-Assisted Intelligence (available today) and Augmented Intelligence (emerging) and depict that the model will transform into Autonomous Intelligence when another maturity model or a modification of the proposed model would have to be designed.

Rooted in Optimization Theory and Mutual Benefit Theory*, it endeavors to optimize the introduction and execution of HRAI strategies to improve HR and business performance concurrently. It follows Mutual Benefit Theory which postulates that what is suitable for the people is good for the business and vice versa.*

Balance and Flow vs. Discreteness. The figure will indicate the ratio between flow and discreteness; for instance, some isolated experimentation would be part and parcel of Stage 1: Enquiry and Exploration, but merely isolated experimentation should not be construed as 'we have arrived.'

Function Specific. *The model is function-specific (HR specific) and can be applied to assess HRAI, so we have indicated specific levels of HR processes in each stage and integration in percentage terms. It is applicable across sectors and businesses because the speed of adoption of HRAI would depend not only on the people's enthusiasm but also on the resources that an organization can deploy. We used the analogy of a staircase to do this. If your staircase has steps of 6 inches, you will need more steps than if you had steps of 9 inches, but in the long run, both staircases will take you to your goal. By creating a 7-Stage model vs. a conventional 5-Stage model for other maturity models, we recognize that the speed of adoption would vary, but eventually, you will still reach the top. Hence more considerable lags in Table I.*

The root to making our model SMART was by indicating the degree of adoption of AI in HR in terms of the degree of adoption of the HR functions and integrating these with the business for performance and an indicative time for each stage of the model.

The model has been kept simple *and devoid of jargon such as 'hype' or threatening terms such as 'chaotic stage.' We tested the simplicity with a*

dozen HR experts. Finally, We did Grandma's test of explaining our model to a cohort of 16 undergraduate business students and asking them to explain whether they understood the model and what they understood. This confirmed the simplicity of the model, which is vital because the model is required to be presented to several stakeholders, familiar and not so familiar with AI.

INSIGHTS FROM SURVEY

We surveyed to find out how the companies stack up in HRAI adoption. The survey covered consulting, Retail, ITeS, Data Analytics, Insurance, Software Development and Services, Wellness and Health, Manufacturing, and Financial Services.

What have the companies done in AI in general? The data (Figure) shows that the adoption rate of AI in general leaves some cause for concern. Thirty-Two percent of the companies have done nothing. Still, the good news is that Thirty-Seven percent are in the process of implementing or in an advanced stage of implementation, with the remaining inactive stage of discussions and research (preparation stage). The pace is being set, and AI will embrace most companies soon.

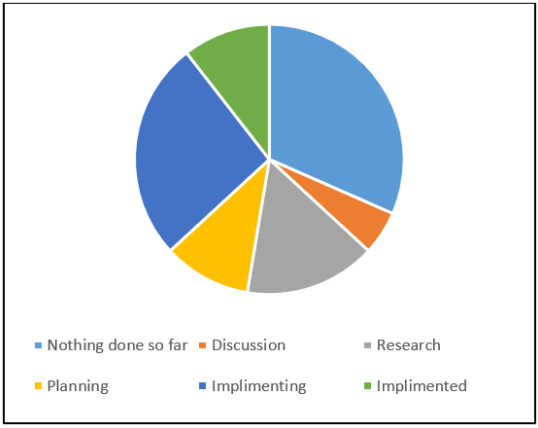


FIGURE 2: THE AI DIVIDE: HOW THE COMPANIES STACK UP IN AI IMPLEMENTATION (IN PERCENTAGE)

Does the size of the company matter in AI implementation? While ten percent of the companies larger than Rs 5000 crores have reached a reasonably advanced implementation stage, the Rs 500 to Rs 1000 crore size companies appear to be better poised for AI implementation, with all of them either in the planning or implementing stage. The less than Rs 100 crore companies seem to have considerable disadvantages, perhaps because of the high cost of AI implementation.

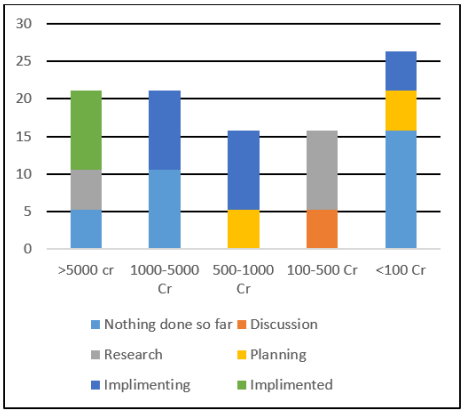


FIGURE 3: DOES SIZE MATTER IN AI IMPLEMENTATION (IN PERCENTAGE)

Adopting HRAI in various HR functions suggests that 50 to 60 percent of the companies have not yet started their HRAI journey. While 10% of the companies have adopted AI for Compensation and Benefits, AI adoption in other functional areas is lesser (Figure 4). Are the companies losing an opportunity for optimization?

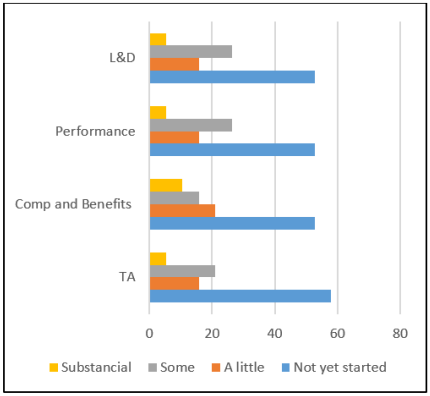


FIGURE 4: A SIMPLIFIED CAMPAIGN TREE DEPICTING LEAD SCORING

WHAT'S THE VALUE OF THE MODEL FOR A COMPANY?

1. There are several benefits for a company from the model.
2. Creating an AI strategy for competitive advantage by recognizing and implementing processes that help reach Stage 7.
3. Monitoring and controlling the HRAI journey.
4. Benchmarking oneself vis-à-vis other comparable companies.
5. Optimal deployment of resources and avoiding the gold rush talk of the start-ups in HRAI.

CONCLUSION

In conclusion, the research team would say that our HRAI maturity model is unique and robust and meets multiple criteria. The team recognizes the importance of refining the model by harvesting more input from different types of companies but reiterates that a robust model is the first step in collecting more evidence.

SELECT REFERENCES

1. Ahmed, O. (2018). Artificial Intelligence in HR. *International Journal of Research and Analytical Reviews*, *5*(4), 971-978.
2. Alsheibani, S., Cheung, Y., & Messom, C. (2018). Artificial Intelligence Adoption: AI-readiness at Firm-Level. In *PACIS* (p. 37).
3. Alsheiabni, Sulaiman; Cheung, Yen; and Messom, Chris, "Towards An Artificial Intelligence Maturity Model: From Science Fiction To Business Facts" (2019). PACIS 2019 Proceedings. 46.
4. AlSheibani, S., Messom, C., & Cheung, Y. (2020, January). Re-thinking the competitive landscape of artificial Intelligence. In *Proceedings of the 53rd Hawaii international conference on system sciences*.
5. Angreani, L. S., Vijaya, A., & Wicaksono, H. (2020). Systematic Literature Review of Industry 4.0 Maturity Model for Manufacturing and Logistics Sectors. *Procedia Manufacturing*, *52*, 337-343.
6. Berger, S., Bitzer, M., Häckel, B., & Voit, C. (2020). Approaching Digital Transformation-Development of a Multi-Dimensional Maturity Model.
7. Berger, Stephan, et al. "Approaching Digital Transformation-Development of a Multi-Dimensional Maturity Model." (2020).
8. Desouza, K., Götz, F & Dawson, G.S.(2021). Maturity Model for Cognitive Computing Systems in the Public Sector. *Proceedings of the 54th Hawaii International Conference on System Sciences.*

9. Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Janssen, M., & More Authors (2019). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*.

10. Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial Intelligence for decision making in the era of Big Data–evolution, challenges and research agenda. *International Journal of Information Management*, *48*, 63-71.

11. Ellefsen, A. P. T., Oleśków-Szłapka, J., Pawłowski, G., & Toboła, A. (2019). Striving for excellence in AI implementation: AI maturity model framework and preliminary research results. *LogForum*, *15*(3).

12. Fidanboy, C. Ö. (2009). *A survey of artificial intelligence techniques for capability maturity model integration (CMMI)* (Doctoral dissertation).

13. Fukas, P., Rebstadt, J., Remark, F., & Thomas, O. (2021). Developing an Artificial Intelligence Maturity Model for Auditing.

14. Isikli, E., Yanik, S., Cevikcan, E., & Ustundag, A. (2018). Project portfolio selection for the digital transformation era. In *Industry 4.0: Managing the digital transformation* (pp. 105-121). Springer, Cham.

15. Jaaksi, J., Koskinen, J., & Jalava, M. (2018). HOW TO DEFINE AN ORGANIZATION'S MATURITY FOR ADOPTING ARTIFICIAL INTELLIGENCE SOLUTIONS.

16. Jia, Qiong, et al. "A conceptual artificial intelligence application framework in human resource management." Proceedings of the International Conference on Electronic Business. 2018.

17. Król, K., & Zdonek, D. (2020). Analytics Maturity Models: An Overview. *Information*, *11*(3), 142.

18. Lu, H., Li, Y., Chen, M., Kim, H., & Serikawa, S. (2018). Brain intelligence: go beyond artificial Intelligence. *Mobile Networks and Applications*, *23*(2), 368-375.

19. Martınez-Miranda, J., & Aldea, A. (2005). Emotions in human and artificial Intelligence. *Computers in Human Behavior*, *21*(2), 323-341.

20. Meister, J. (2019). Ten HR trends in the age of artificial Intelligence. *Forbes. Retrieved*, *20*.

21. Premnath, S. N., & Arun, A. (2020). A Qualitative Study of Artificial Intelligence Application Framework in Human Resource Management

22. Renz, A., & Hilbig, R. (2020). Prerequisites for artificial Intelligence in further education: identification of drivers, barriers, and business models of educational technology companies. *International Journal of Educational Technology in Higher Education*, *17*(1), 1-21.

23. Saari, L., Kuusisto, O., & Pirttikangas, S. (2019). AI maturity web tool helps organisations proceed with AI.

24. Schumacher, Andreas, Selim Erol, and Wilfried Sihn. "A maturity model for assessing Industry 4.0 readiness and maturity of manufacturing enterprises." Procedia Corp 52 (2016): 161-166Shneiderman, B. (2020). Human-centered artificial Intelligence: Reliable, safe & trustworthy. *International Journal of Human-Computer Interaction*, *36*(6), 495-504.

25. Sima, V., Gheorghe, I. G., Subić, J., & Nancu, D. (2020). Influences of the industry 4.0 revolution on the human capital development and consumer behavior: A systematic review. *Sustainability*, *12*(10), 4035.

26. Singh, R., & Bhanot, N. (2020). An integrated DEMATEL-MMDE-ISM based approach for analysing the barriers of IoT implementation in the manufacturing industry. *International Journal of Production Research*, *58*(8), 2454-2476.

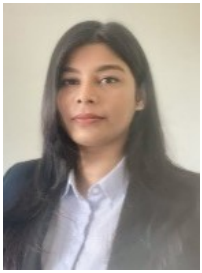
27. Szedlak, C., Poetters, P., & Leyendecker, B. (2020). Application of Artificial Intelligence In Small and Medium-Sized Enterprises. In *Proceedings at 5th NA International Conference on Industrial Engineering and Operations Management*.

28. Ulas, D. (2019). Digital transformation process and SMEs. *Procedia Computer Science*, *158*, 662-671.

29. Ustundag, A., & Cevikcan, E. (2017). *Industry 4.0: managing the digital transformation*. Springer.

30. V., Jantunen, M., Halme, E., Kemell, K. K., Nguyen-Duc, A., Mikkonen, T., & Abrahamsson, P. (2021). Time for AI (Ethics) Maturity Model Is Now. *arXiv preprint arXiv:2101.12701*.

AUTHORS

 **Neha Tewari**	 **Nivedita Choudhury**	 **Midhun N**

This Whitepaper is based on a capstone project undertaken by Neha Tewari, Nivedita Choudhury, and Midhun N as a requirement for the fulfilment of the Career Track Program in Digital HR offered at Jagdish Sheth School of Management. The authors wish to thank Mr. Vishwanadh Raju, Head - India Talent, Dun & Bradstreet, and Professor (Col). P.S. James for their constant guidance and assistance.

UNDERSTANDING THE 2 WHEELER ELECTRIC VEHICLE LOAN CUSTOMER

ANIKET CHANDRA
ANSHUMAN PATTNAIK
SHRUTI BARNWAL
VRINDA RATERIA

ABSTRACT/BUSINESS CASE:

In the new world, post the COVID-19 pandemic, being environmentally conscious and having one's transportation has become a necessity. Rising prices of fuel and the creation of charging infrastructure for Electric Vehicles have become one of the critical drivers for the purchase of environment-friendly vehicles for individuals residing in metros and Tier 1 cities. India is a two-wheeler (2W) market. The affordability and range of options for such 2W-Electric Vehicles (2W-EV) make it the de-facto choice for many, including Millennials and GenY, seeking their first mode of transport.

LoanTap is one of the leading Fintechs in Alternative Lending with a five-year track record and an AUM exceeding Rs 350 Cr. They target prime customers with unconventional unsecured products like EMI loans, Travel loans, Wedding loans, and Revolving Lines of Credit for salaried customers. They are also building an SME loan portfolio with institutional partners like Big Basket. LoanTap is a new entrant to the 2W-EV loans and sought JagSoM's assistance in understanding this segment better, understanding the profile of loan takers and how to target them with digital marketing tools, and to effectively target them, build awareness and drive conversions.

BACKGROUND

ABOUT THE COMPANY

LoanTap is an RBI registered NBFC apart from being a tech-enabled Alternative Lending FinTech. LoanTap offers alternative loans to the youth and millennials to achieve liquidity at the right time to have the life they desire.

LoanTap's founders have many years of experience in the financial services industry and have hired an experienced leadership team to create one of the Top 10 Lending FinTechs in the country.

PROBLEM STATEMENT / KEY OBJECTIVES & SCOPE

PROBLEM STATEMENT

To target the right customer segments with product features that address their needs for 2W-Electic Vehicles (EV. LoanTap had existing partnerships with regular 2W dealerships (IC Engine-2W), and the financing cases were brought to LoanTap by the dealers. Hence, their understanding of 2W customers was primarily ones forwarded by dealers.

To understand Salaried and self-employed prospects' specific financing needs and loan features, LoanTap would like to approach the customer directly and get them to avail of the "pre-approved" loan before going to a dealership in the ideal case. In a more realistic scenario, the customer should select the 2W-EV model and think of LoanTap as the preferred lender, given their understanding of the product.

KEY OBJECTIVE

LoanTap approached JagSoM to do a survey where the findings would help them pinpoint the personas of potential customers. The customer journey map (CJM) was also created for each persona to create a targeting plan using digital marketing tools. The brief to JagSoM was to research and identify at least three distinct personas who were most likely prospects for LoanTap's 2W-EV loan product with a high chance of a conversion.

The CJM would provide insights into the customer buying pattern and help identify media consumption where such an action could be influenced and barriers to purchase for the identified persona.

SCOPE

This project aims to understand these customer personas through a primary survey conducted at 12 2W-EV dealerships across three different tier cities in India: Tier -1 (Bangalore and Kolkata) and Tier -2 (Mau). The Project team visited the dealerships on an ongoing basis for over two weeks and met with their Sales Team as well as walk-in customers. The standard profiles of such customers were used to define the four personas.

The JagSoM Marketing team created a continuum by understanding the touchpoints of these personas and building a targeting plan based on the MarTech tools available at the disposal of LoanTap's Digital team.

STUDY DESIGN AND METHODOLOGY

The study comprised a primary survey as aforementioned across the twelve 2W-EV dealerships across two phases as under:

PRIMARY SURVEY: PHASE-1

The preliminary primary survey (Phase-1) was conducted to shortlist the dealerships with diverse customer demographics. Subsequently, their relative market share was used to give the relative weightage to the average customer persona to arrive at the "Top 4" standard personas for 2W-EV loans and who would, likely, avail of loans from NBFCs or Fintechs like LoanTap. The dealerships were shortlisted across Bangalore, Kolkata, and Mau as the project team was based there during the pandemic lockdown and could not travel to any other location like Pune. This survey consisted of finding details of the 2W-EV models, pricing and specifications, and available loan options. The financing options for the 2W-electric vehicles, consumer behavior, and perception were observed directly and by asking the dealers. The details were captured through note-taking and by administrating a questionnaire. The different two-wheeler Electric vehicles taken into consideration for the survey were Hero Electric, Okinawa, Bajaj Chetak EV, PureEV, Ather Energy, and Ampere.

The daily usage requirements of such consumers were also studied, viz. daily commute linked to their daily activities as part of the data gathering exercise. The significant types of consumer profiles who seek financing or pay in cash and different vehicle loan eligibility criteria by Commercial Banks like Axis & Bajaj Finance and niche NBFCs like Aon (along with the applicable interest rates) were documented in the primary survey. The direct approach to the customer by such financing competitors was observed. The benefit of a physical presence through an agent (Axis, Bajaj Finance) versus the Online / Mobile App of other Lending FinTechs assessed to gauge conversions.

One of the underlying assumptions is that the consumer first selects the model (2W-EV) and then goes for the financing. LoanTap targets the bikes in the range of Rs 50,000 – Rs 1 Lakh and not the highest end 2W-EVs in the field of Rs 1.3 lakh upwards.

PRIMARY SURVEY: PHASE-2

With advice from a consumer behavior expert, the average persona computation resulted in further dealership meetings and phone conversations with survey respondents to better understand their psychographics.

The Customer Journey Map is made for each shortlisted "average" persona right from the decision to evaluate personal transport (2W-EV) to driving out of the showroom with the vehicle.

METHODOLOGY

The average customer personas were determined by a methodology ratified by Prof R Srinivasan, Consumer Behaviour expert and ex-CEO Kantar. The most common persona (for a Rs 50K 2W-EV loan with likely need for NBFC financing) in a particular dealership was profiled in detail for each dealership visited across the three cities and multiplied by the market share dealership in terms of 2W-EVs sold. Interviews confirmed these details at the dealership over two weeks. The questionnaire inquired about their approach to the decision of purchasing a 2-wheeler EV and the process of evaluating and selecting the product.

The questionnaire also sought their view on financing options by NBFCs.

A customer journey map (CJM) was made for each selected persona, from evaluating the purchase of a personal transport vehicle (2W) to the actual delivery of the vehicle post financing.

An initial qualitative survey was conducted at a few dealerships to understand the product range and services provided at the showroom to build the survey questionnaire. The information about the customer requirements and availability of lending options was also understood. Dealership sales staff and the dealership's owner provided information on the type of consumers who buy the product in Cash versus seeking financing. The purpose of purchasing the different types of EVs according to the speed limits of the vehicle was also analyzed.

In the primary survey, direct interviews were done at the dealer showroom. The finance-seeking and non-finance-seeking 2W EV customers were interviewed to get their responses.

The Average personas of 2W-EV buyers who were potential NBFC / LoanTap customers were profiled in demographics and other parameters. Fourteen interview inferences were used to make the primary persona of the customers of both those who are taking loans and those who are buying in cash.

After getting the details, around 90% of the funding was done by the traditional bank lenders like Axis Bank or large NBFCs like Bajaj Finance with low-interest rates of ~10% versus niche NBFCs and Fintechs whose rates of lending were higher by 200 – 500 basis points.

FINDING AND REFERENCES

We sought to create a random sample by looking at dealerships that covered different parts of the metros catering to different demographics and then shortlisted them for inclusion in our survey. Various details on the percentage of customers, which types availed financing, and interviewing the customers onsite provided insights into the study and built the average persona. Banks offer the lowest interest rate but are selective on the type of customers they finance (typically salaried or with steady business income), and there is a lot of paperwork. These traditional lenders seek customers with high credit (known as CIBIL scores in India) scores.

After getting the market share, we inferred that the market share of Loan tap type of lenders is only 10% of the addressable market. They provide finance and target the specific consumer segment who are not getting funding from traditional lenders. But is there a way to broaden this base by offering pre-approved loans, top-ups for accessories, and minimum paperwork while ensuring a robust collections mechanism from such borrowers?

The other insight was that people look at the monthly EMI amount and not the finance rate to check affordability and are not so sensitive if the tenure is 3-4 months longer, say 42 months instead of 36. The upfront processing fee (apart from the down payment of typically 20%) was another irritant that could be kept to the bare minimum to build customer affinity.

The average persona profile buyers use 2W-EV for their daily commute, 25-35 KM. Many of them use the EVs for everyday tasks like dropping and picking up children from school, office commute and shopping in a nearby supermarket. They were conscious of the savings effected by EV versus using diesel IC Engine 2W. Generally, those customers who prefer cash payments are the premium customers who are likely business owners or with strong financial backing or bank balances.

We found that the EV Brands like Ather and Bajaj Chetak are in the premium segment, which is not the target of LoanTap financing. However, the 2W EV brands like Hero Electric, Okinawa, and PureEV are in the economy segment and the focus of LoanTap.

Buyers' knowledge of subsidies (Rs 6K – 30K per bike) was also limited – some of them only came to know of it if the dealer chose to disclose it to them.

PERSONA 1

Demographics: Self Employed PG owner

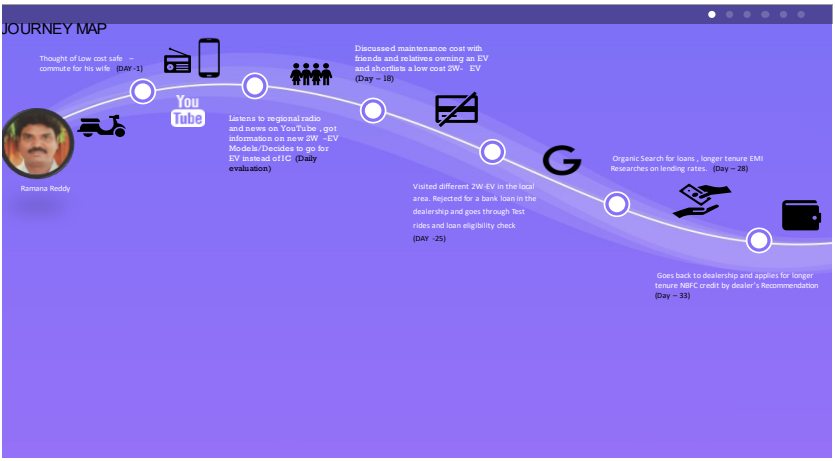
- Age of buyer:40
- Salary range: > 50,000 per month
- Gender: Male
- Education: BA

- Daily commute:15 Kms (avg)
- Marital status: Married

His Journey in Buying a Financed EV

The self-employed PG owner is a father of two kids, a five and an eight-year-old. This person owns an IC engine scooter, his wife's daily commute to the three different PGs situated at a distance of 2-3 Kms from each other and dropping off children to school and back due to unavailability of school transport was a significant challenge that triggered the need of a low maintenance safe 2-wheeler electric vehicle. This persona consumes daily information from newspapers/radio and Facebook and got to know about the new segment of 2W-EVs and some of their locations in Bangalore city from radio ads he listens to twice in his daily schedule. Apart from radio and newspaper ads, he further researched the Hero electric EV and took feedback from a few EV customers, one of them staying in his PG; the research process of deciding and finalizing the EV product took 1-2 months to arrive at a decision. After the research process, this was pre-determined that he wouldn't go for the EV on total cash to avoid the overburden of money being the only earning member of the family. Test rides of the vehicle convince process the decision further decision. He was introduced to different lenders and interest rates by the dealer itself. This happened at the last stage when the consumer finalized the decision to buy the EV. He was disqualified for a bank loan by the credit check in the dealership. The dealer influenced his decision to go for an NBFC credit after getting disqualified by a bank's credit check. The NBFC's digital process was hassle-free with less document work, and he went through a good customer experience even when the interest rate was higher than the bank.

Journey Map



PERSONA 2

Demographics:

Age of Buyer – 35

Salary Range – <1 lakh

Gender – Male

Education – M.Sc.

Commute Distance – 20-30KM

Marital status – Married

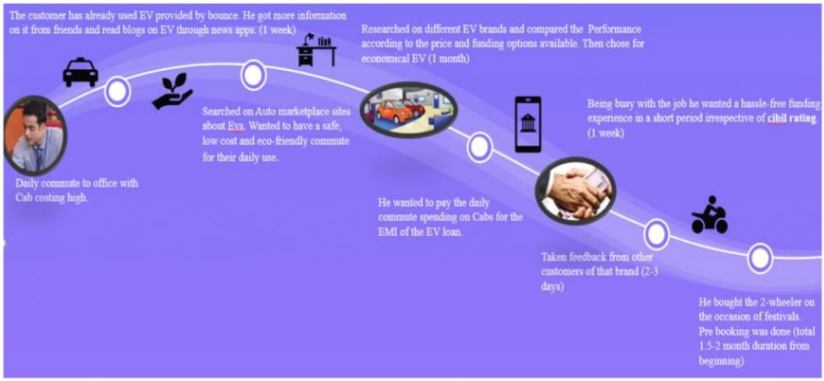
Psychographics:

A 35-year-old married working professional has a salary of less than 1 lakh INR (Indian rupee) per month. He is an M.Sc. graduate based in Gujarat and working in Bangalore for the last five years. His daily commute is in the range of 20-30

KM. Mainly the daily commute is for Office transportation. He used to prefer Bounce or Ola for his daily travel. He already has a sports bike YAMAHA R15 which consumes heavy fuel. He wants to switch to a low-cost commute for the daily commute. He is a price-conscious consumer. He researches the product and whether the product is worth money or not. Repaid the loan he took in 2018 for the IC engine bike in the specified tenure. He doesn't know much about the interest rates of NBFCs and subsidies. He wants a hassle-free purchase and will decide to take a loan after getting the information on the different lenders, including the NBFCs.

He decided to buy the EV after getting the information from his child's friend's father. He used to travel on Bounce scooters (rental scooters) for the office. It took around three months to buy from deciding to buy a 2-wheeler EV. He researched the other available products and the lending facilities available for purchase.

Journey Map



PERSONA 3

Demographics:

Age of Buyer – 35

Salary Range – 65K - 70K

Gender – Female

Education – BBA

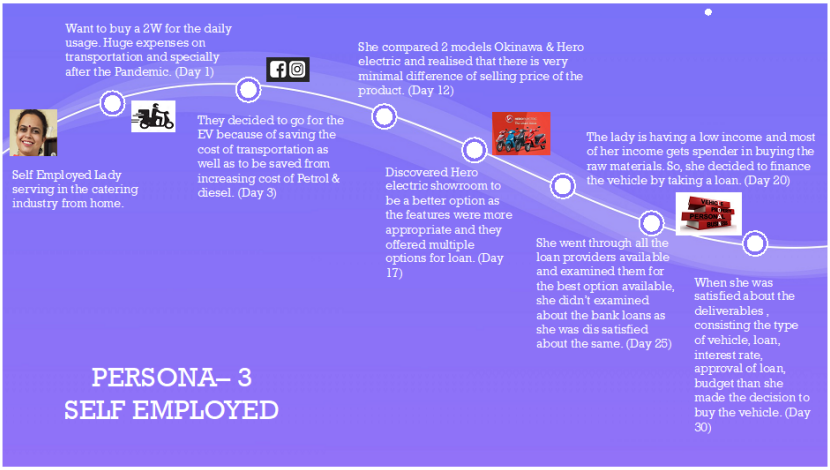
Commute Distance – 40-45Km

Marital status – Married

Psychographics:

The self-employed lady has two kids and wants to make her passion for cooking a business. She started her small business one year back in cooking and serving meals in hampers. She started with very minimal investment and slowly grew her business. She wanted a 2-Wheeler for commuting to the market for the raw materials of deliverables and delivering the finished goods to the customers. She usually uses social media like Instagram and Facebook to be updated about the world. She came to know about the EV from her business friend who used it for their personal use and was also aware of it. Their competitors started using EVs for delivery and began serving customers at low delivery costs. She searched and inquired about it with friends, relatives, and stores as well as she visited a few of the recommended stores and checked them out personally about the comfort, features, perks, prices, and financing options. She took a piece of advice from her home loan provider, which she took four years back and could connect good relations with because of multiple references. She got an option of Aeon or Loan tap option. After researching the loan providers, she decided on the type of loan and interest rate, vehicle, documentation, and other minor formalities. The loan was approved quickly, and she received her car within 28 days of starting her research.

Journey Map



PERSONA 4

Demographics:

Age of Buyer – 27

Salary Range – > 40K

Gender – Female

Education – MA (English)

Commute Distance – 30 Km

Psychographics:

She is a very hardworking person. She wants to attain financial freedom and to look to monetize her talent on an ed-tech platform. Every day she travels to school by public transport, and she spends a lot of money on daily expenses. So, she thought of buying a vehicle instead of spending too much on traveling. She was confused about buying the EV; she consulted her parents

and colleagues and recommendation from those who already are EV Customers. She was aware of various loan products. She started researching on maintenance costs of both IC engine and EV products by visiting the nearest dealership. Dealers helped her with the different loan offers and interest rates. She was Looking for a low EMI for a longer tenure to finance her EV. She wanted any trusted lender with an easy and convenient process flow. After many searches on Google and interacting with different people, someone suggested to her to she approach the NBFC for a loan. She came NBFC for the vehicle loan because of less paperwork, hassle-free, and loan approval with a low CIBIL score. The total time taken for the loan approval was ten days. And she bought the vehicle within one month. Post booking, the waiting period was high.

Journey Map

KEY CHALLENGES

a) Customers of 2-Wheeler Electric Vehicles were, in general, not willing to be interviewed by strangers during these pandemic times to minimize proximity and contact and also were suspicious about the data collection and the purpose for which it would be used. They were unwilling to share their mobile contact details where they could be contacted for any follow-on questions or clarifications.
b) Since 50% of customers were typically buying 2-Wheeler Electric Vehicles with cash and around 40% were going to traditional lenders, finetuning and down-selecting average persona for 10% balance customers who could be an addressable market of LoanTap and then reaching out to them (including language limitations) was a tad difficult.

RECOMMENDATIONS

The exercise shows that buyers' average ranges from 25 to around 40. The Salary ranges from Rs 40K to just below Rs 1 lakh per month.

We recommend:

a) A tiered interest rate (and EMI spread over different tenures) is customized for various customers based on their risk profiles or other segmentation bases.
b) Such prospective customers will appreciate Pre-approved loans before a customer approaches a dealer or showroom. They can hasten the purchase decision, leading to a faster buildup of the loan books.
c) While LoanTap can initially project itself as the universal provider of loans for people with low CIBIL scores and self-employed, they should seek a timeframe to move up towards the regular loan seeker and compete for head-on with the large NBFCs and banks, even if the net interest margin is low.

ANNEXURE: QUESTIONNAIRE

From dealer data received by each of us, we started populating the excel with six rows and as many columns as dealers.

Qualitative Survey (with dealers)

Row 1 - Age of Buyer

Row 2 - Salary Range

Row 3 - Male/Female

Row 4 - Education - more educated (salaried), less (self-employed)

Row 5 - Commute distance (short daily, weekend)

Row 6 - % of loans from Loantap type firms versus Axis/Bajaj

For each dealer, we tried to map the market share for the specific range of Electric vehicles we are targeting.

Main Questionnaire (to Consumers fitting average persona or otherwise)

We spoke to 2 Wheeler Loan seekers (personas) from each dealership about:

1. What is their path to evaluating 2W Elec purchase
2. Attitude to life & beliefs
3. Attitude to money and how price-sensitive
4. Why take a loan?
5. What were their pain points?
6. Do they prefer less hassle even if they pay Rs 100 more per EMI?
7. Repayment experience (any loan, by type of provider - Bank vs. NBFC vs. Fintech)

8. General attitudes and beliefs about life and work and daily commute? Hassle-free preference? What is their attitude towards money - prefer low EMIs or low-interest rates? Like to bargain?
9. Reason for choosing EV - low cost / environment conscious / low maintenance / etc.
10. When did they start looking for EVs?
11. How do they select the right EV - brand, price, aware of subsid?
12. How do they decide on taking a loan, and what is essential (less paperwork, low rate of interest, etc.?
13. What has been your past repayment experience on loans? Prefer a bank or NBFC for a loan?

How will they exchange the IC engine bike for the new EV bike? Looking for an exchange scheme so proper a brand that has both IC and EV for the best deal (e.g., Hero Active IC and Hero EV)?

AUTHORS

			
Aniket Chandra	**Anshuman Pattnaik**	**Shruti Barnwal**	**Vrinda Rateria**

This Whitepaper is based on a capstone project undertaken by Aniket Chandra, Anshuman Pattnaik, Shruti Barnwal, and Vrinda Rateria as a requirement of the fulfillment the Career Track Program in FinTech offered at Jagdish Sheth School of Management. The authors wish to thank their corporate mentor, Mr. Ajit Yadwadkar, VP & Head-HR, LoanTap, and Professor Soumya Choudhury, Chairperson – Finance Area, for their constant support and guidance.

A COMPREHENSIVE STUDY TO UNDERSTAND AND ANALYZE THE PURCHASE BEHAVIOUR OF MILK BUYERS

DEEPAKH KANNAN
AKASH M H
GAYATHRI G
DINESHWAR A
POORNIMA SAI

ABSTRACT

The e-grocery market in India is becoming an attractive segment because of the increase in the pandemic-driven adoption of online ordering of essentials. With the rise in disposable income and increase in digital awareness among consumers, the e-grocery market in India is expected to see a phenomenal growth. According to RedSeer, a consulting firm, the total size of the e-grocery market in India is estimated to grow from $1.9 billion in 2019 to $3 billion by 2021.

Many prominent players like Flipkart, Amazon, Swiggy, Dunzo, and Reliance Jio are vying for a more significant share in the market. Organizations like Bigbasket, Grofers, and niche players like Nature's Basket are the incumbents in this market and dominate specific product categories. In this study, we focused on one of India's leading e-grocers, and the product category in focus is milk. The primary objective of this study was to understand consumers' purchase patterns and triggers that influence consumers' buying milk through offline and online channels.

INDUSTRY BACKGROUND

The e-grocery sector encompasses various e-commerce-based web and mobile applications to purchase food, groceries, and other household items. The e-grocery sector has altered customer shopping behavior and transformed the entire retail landscape from brick and mortar to an omnichannel experience.

The growth of the e-grocery sector can be attributed to powerful trends, including new competitive pressure, advancements in technology, and the constant evolution of consumer attitude and behavior. Along with these factors, simplified supply chain platforms have positively transformed the consumers' grocery shopping experience. They have also played an instrumental role in developing the supplier/brand reach across consumers. The industry has witnessed tremendous growth on account of the global pandemic. The industry landscape has quickly pivoted and charged forward, accelerating platform adoption because of the sudden shift in consumer habits.

PROJECT OBJECTIVE

In the new world that continues to fight the Covid 19 pandemic, being health conscious and buying through online stores has become the norm for many individuals, especially those residing in metros and Tier 1 cities. Brands and online retailers have witnessed business volumes soar for food essentials through their respective websites or mobile applications. A major e-grocery player sought to learn everything there was to know about the milk market.

PROBLEM STATEMENT

"Understanding and analyzing the customer triggers and purchase/buying behavior of three cohorts for the Milk category for India's leading e-grocer"

For the above problem, the following cohorts were identified for study:

- Cohort 1 - Those who purchase product categories other than milk from online stores.
- Cohort 2 - Purchase milk online but not from the e-grocer in focus.
- Cohort 3 - Purchase everything only through offline stores.

APPROACH TO THE PROBLEM

To understand the milk-purchase behavior of consumers, we initially conducted an exploratory qualitative study to capture the factors that consumers consider while buying milk. This gave us insights into the significant factors from the consumer's point of view when it comes to purchasing milk, both from online and offline channels. Subsequently, a descriptive study was carried out through a survey. A comprehensive survey questionnaire was created to capture all aspects of understanding consumers' milk purchase behavior. To make it effective for the organization in gaining actionable insights from the entire exercise, the sample was chosen so that the target sample was non-customers of the e-grocer in focus. In addition to that, it was paramount to ensure that an equal number of responses in all three cohorts were collected.

Keeping in mind the e-grocer's operational facets, we focused on collecting data from consumers who live in high-rise buildings (gated communities/societies). Hence the samples for the study were chosen from the locations given below:

- DLF Westend Heights- JP Nagar (Bengaluru)
- Golden Grand- Yeshwantpur (Bengaluru)

- Krishna Arya Elegance- Yeshwantpur (Bengaluru)
- Ittina Mahavir- E-City Phase-1 (Bengaluru)
- Ajmera Infinity- E-City Phase -1 (Bengaluru)
- Smondo 3.0 - E-City Phase -1 (Bengaluru)

FINDINGS & INSIGHTS

A comprehensive qualitative study was conducted before finalizing the survey questionnaire. The insights from the qualitative study are presented below.

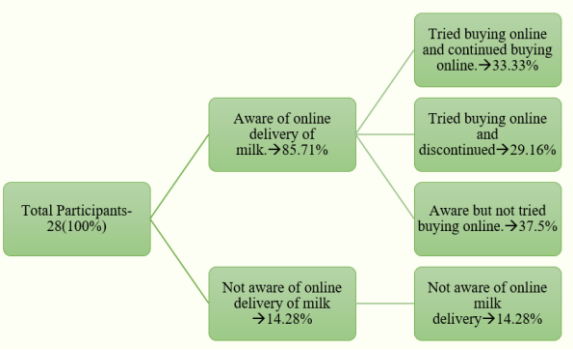
QUALITATIVE STUDY

A focus group discussion was carried out to get insights into the key objectives and the problem statement. Three focus group discussions, one for each city, were carried out. The factors that evolved during the discussions were noted down. These factors formed the basis for questionnaire development.

No: of Participants: 27

Location of focus: High-rise apartments in Tier-01 cities, namely Bangalore, Hyderabad, and Chennai.

INSIGHTS:



The following are the reasons that evolved from the qualitative study for not continuing milk purchases from online milk delivery platforms.

- Lack of user-friendliness of the application
- Product misplacement during delivery
- Delivery of tampered product
- Offline buying is convenient
- Not delivering at the doorstep
- Negative feedback from neighbors
- Fear of getting old stock
- Not able to trust the freshness of the milk
- Preferences for healthier choices like almond milk
- Lack of trust in the delivery person
- Delayed delivery of the product
- Preference for procuring milk in the evening
- The subscription price is costly

The questionnaire was developed and administered through the Zoho survey platform post the qualitative study. Zoho platform had the option of filtering the customers into varied cohorts. A total of 379 responses were collected. The cohort-wise break up is given below.

Type of response	Number of responses
Total responses	379
Cohort 1 (purchase online but not milk)	137
Cohort 2 (purchase the milk online but not from e-grocer in focus)	108
Cohort 3 (purchase everything offline)	101

TABLE 1: PRIORITISATION OF BUYING CENTRE MEMBERS

INSIGHTS FROM COHORT-01 - "PURCHASE PRODUCT CATEGORIES OTHER THAN MILK FROM ONLINE STORES"

The respondents in this cohort generally purchase products from online stores, but they don't buy milk from online channels. For this cohort, data related to customer preferences, triggers, and reasons for buying milk in the offline mode were collected. In addition, their experience with their current milk delivery platforms and awareness of other online milk delivery platforms were also collected. This helped us identify the customer's satisfaction with various factors on a 5-point Likert scale. The findings are presented in the following table.

Response collected - 137 recipients.

Current Source of Purchase for Milk	High Level of Satisfaction	Medium Level of Satisfaction	Low Level of Satisfaction
From Nearby Convenience Stores (59 responses)	• Freshness & quality of milk. -4.30 • Preferred time of purchase. -4.10 • Buy only when they need to-4.20 • Convenience of purchase-4.06	• Relationship with vendor -3.70	• Preference to buy late evening/ afternoon-3.1
Monthly token system basis (38 responses)	• Convenience of purchase-4.60 • Freshness & quality of milk. -4.2 • Preferred time of purchase. -4.3	• Relationship with vendor -4.0	• Buy only when they need to. -3.2 • Preference to buy late evening/ afternoon-2.2
Milk delivered at the doorstep by cattle owners (32 responses)	• Convenience of purchase-4.5 • Freshness & quality of milk. -4.42 • Relationship with vendor-4.25	• Preference to buy late evening/ afternoon-3.88 • Buy only when they need to-3.6	• Preferred time of purchase. -3.03

TABLE 2: INSIGHTS FROM COHORT-01

The insights from Table 2 suggest the following inferences:

- People who prefer to buy from the nearby convenience store state that freshness and milk quality and purchase at their preferred time are more important. One of the triggers for their preference for offline mode is the charges of delivery charge. Also, one point is that the respondents prefer to buy milk only when they need to and don't consume milk daily. Some maintain a friendly relationship with the vendor from whom they buy milk.

- For people who have subscribed to a monthly token system (procuring a specific number of coupons in advance and getting milk by presenting the coupons to the milk vendor whenever the customers want to), convenience in purchasing milk was found to be the most satisfying factor.

- People who prefer fresh farm milk (i.e., pure cow or buffalo milk) prefer to receive milk from the cattle owners at their doorstep in the afternoon or late evening. They believe that this would ensure the freshness and quality of milk when consumed.

From this cohort, awareness about various online milk delivery platforms was also collected, and the findings are as follows:

S No:	Online Channels	Awareness
1.	BB Daily (Big Basket)	27.23%
2.	Simpli Subscribe	21.28%
3.	Jio Mart	15.32%
4.	Country Delight	14.04%
5.	Not aware of any online channel	7.66%
6.	FTH Daily (Fresh to Home)	5.53%
7.	Suprdaily	5.11%
8.	Goodmylk	2.55%
9.	Milk Pot	1.28%

TABLE 3: INSIGHTS FROM COHORT-01

INSIGHTS FROM COHORT-02 - "PURCHASE OF MILK CATEGORY ONLINE BUT NOT FROM THE E-GROCER IN FOCUS."

The respondents in this cohort purchase all product categories, including milk, from an online channel other than the e-grocer in focus. Our survey collected information about the respondents' preferences, reasons for purchasing milk, and their experience with their current online milk delivery platforms. This assisted us in identifying the customers' satisfaction level with various factors on a 5-point Likert scale.

Current Purchase of Milk	High Level of Satisfaction	Medium Level of Satisfaction	Low Level of Satisfaction
Through other online milk delivery platforms (across all competitors combined)	• Freshness & quality of milk. -4.48 • Delivery time of the service-4.37 • Packaging of the product during delivery-4.01 • User friendliness of the app-3.97 • Behavior of the delivery person-3.91	• Availability of your go-to-brand-3.81 • Responsiveness to customer complaints-3.66 • Responsiveness to customer queries-3.56 • Availability of varied products-3.26	• Offers available on the portal-3.21

TABLE 4: INSIGHTS FROM COHORT-02

From table 4, we can infer the following:

- The respondents in cohort two who subscribe through platforms other than the e-grocer in focus for their milk delivery have an excellent experience with the delivery time of milk, product packaging, and the user-friendliness of the mobile application.
- The e-grocer in focus can attract its competitors' milk customers to its platform if it pays attention to and improves the following dimensions: availability of your go-to brand, responsiveness to customers complaints, responsiveness to customer queries, and availability of different types of products.

- The collective response from participants on a lower level of satisfaction is the availability of offers. This states that most of the platforms are offering very few offers on milk as a product. Hence the e-grocer can use multiple offers and schemes in the milk product category. This will eventually act as a point of differentiation.

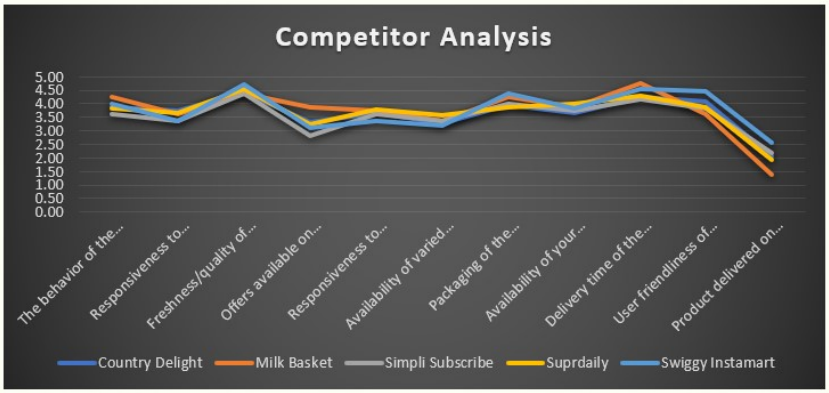
The following table gives a detailed analysis of the customer's satisfaction level with various factors for each competing online milk delivery platform.

Competitor	High Level of Satisfaction	Medium Level of Satisfaction	Low Level of Satisfaction
Country Delight (19 responses)	• Freshness & quality of milk. -4.40 • Delivery time of the service-4.26 • User-friendliness of the app-4.06 • Packaging of the product during delivery-3.93 • The behavior of the delivery person-3.86	• Responsiveness to customer queries-3.73 • Availability of your go-to-brand-3.66 • Responsiveness to customer complaints-3.60 • Offers available on the portal-3.33	• Availability of varied products-3.26 • Product delivered on time but not good quality- 2.06
Swiggy Instamart (12 response)	• Freshness & quality of milk. -4.73 • User-friendliness of the app-4.45 • Packaging of the product during delivery-4.36 • The behavior of the delivery person-4.0 • Availability of your go-to-brand-3.82	• Delivery time of the service-3.55 • Responsiveness to customer queries-3.55 • Responsiveness to customer complaints-3.56 • Availability of varied products-3.18	• Offers available on the portal-3.09 • Product delivered on time but not good quality- 2.55

Milk Basket (11 responses)	• Delivery time of the service-4.75 • Freshness & quality of milk. -4.38 • Packaging of the product during delivery-4.25 • The behavior of the delivery person-4.25 • Offers available on the portal-3.88	• Availability of your go-to-brand-3.87 • Responsiveness to customer queries-3.87 • Responsiveness to customer complaints-3.80 • User-friendliness of the app-3.62	• Availability of varied products-3.38 • Product delivered on time but not good quality- 1.27
Simply Subscribe (11 responses)	• Freshness & quality of milk. -4.36 • Delivery time of the service-4.18 • Packaging of the product during delivery-4.00 • User-friendliness of the app-3.81 • Availability of your go-to-brand-3.72	• Responsiveness to customer queries-3.36 • The behavior of the delivery person-3.36 • Responsiveness to customer complaints-3.36 • Availability of varied products-3.36	• Offers available on the portal-2.81 • Product delivered on time but not good quality- 2.18
Supr Daily (23 responses)	• Freshness & quality of milk. -4.56 • Delivery time of the service-4.27 • customer queries-3.67 • Availability of your go-to-brand-4.00 • Packaging of the product during delivery-3.89 • The behavior of the delivery person-3.83	• User-friendliness of the app-3.80 • Responsiveness to customer complaints-3.77 • Responsiveness to availability of varied products-3.26	• Offers available on the portal-3.22 • Product delivered on time but not good quality- 1.94

TABLE 5: DETAILED ANALYSIS OF CUSTOMER SATISFACTION LEVEL OF COMPETING ONLINE MILK DELIVERY PLATFORMS

The following graph presents the consolidated information of the customer's satisfaction level for each online milk delivery platform on various parameters.



GRAPH 1: CONSOLIDATED INFORMATION ON CUSTOMER SATISFACTION LEVELS

Reasons for switching milk subscription services

Out of the 108 respondents in this cohort, 19 had moved out to a different service provider from the e-grocer in focus. On exploring further, the reasons for switching were as follows:

S No:	Reasons	Percentage (n = 19)
1.	Delayed delivery of the product	25%
2.	Delivery of tampered product	21%
3.	Product misplacement during delivery	14%
4.	Lack of trust in delivery person	11%
5.	Offline buying is convenient	7%
6.	Fear of getting old stock	5%
7.	Not able to trust the freshness of the milk	5%
8.	Subscription price is higher	5%
9.	Not a user-friendly mobile application	4%
10.	Prefer to buy milk in the evening time	2%

TABLE 6: REASONS FOR SWITCHING MILK SUBSCRIPTION SERVICE FROM E-GROCER IN FOCUS

INSIGHTS FROM COHORT-03 - "PURCHASE EVERYTHING ONLY THROUGH OFFLINE STORES."

The respondents in this cohort purchase all products (including milk) entirely in an offline mode. We collected data about barriers that may prevent respondents in this cohort from buying products in online way. The findings are represented in the following table.

S No:	Barriers	Percentage of respondents (n=101)
1	Fear of getting stale milk	21%
2	Not aware of an online milk subscription service	14%
3	Fear in delayed delivery time of the service	13%
4	Traditional approach is trustable	13%
5	Fear of receiving a tampered product	7%
6	Subscription price is higher	7%
7	Complicated application user interface	6%
8	Issues with the refund or return policies	5%
9	Payment issues in an online platform	4%
10	Delivery service not available in your location	3%
11	Not getting sufficient discounts/offers	3%

TABLE 7: BARRIERS TO BUYING ONLINE FROM COHORT-03-" PURCHASE MILK CATEGORY ONLY IN OFFLINE STORES."

ACTIONABLE INSIGHTS

GENERAL INSIGHTS

The inferences derived from our analysis suggest a couple of actionable insights that the e-grocer in focus may consider adopting:

- The above survey results indicate that the awareness of the e-grocer in focus is relatively high; however, the customer churn is high as well, and most churned customers point out two significant factors for their switching: delayed delivery of the product (25%) and delivery of the tampered product (21%). These customers also pointed out that they weren't informed about the delay in the delivery. Hence, the e-grocer can

mitigate this problem by proactively informing customers about any expected delay in delivering the products.

- We recommend introducing a chat system that would help connect the customer with the enterprise (e-grocer in focus). This will reduce the customer's stress when the product isn't delivered at the scheduled time.

When the delivery person faces specific issues in delivering the product, they can intimate the e-grocer, who, in turn, should send a push notification or message to the customer so that the customer will be aware of the situation. This will lead to smoother operations.

Once the message for delayed service is received, the customers' anxiety might be reduced. Once the product is delivered, product feedback shall be collected regarding the following factors: -

- ✓ Freshness/quality of the product
- ✓ Timely delivery of the product
- ✓ Product refund/ carry forward
- ✓ Please mention any other queries (qualitative)

This gives the customers a chance to address their problems. It also decreases the communication gap.

COHORT 1 INSIGHTS

The study identified that the customers who prefer fresh farm milk (i.e., pure cow or buffalo milk) ideally take the delivery in the afternoon or late evening. To cater to this specific customer segment, having two delivery slots – one in the morning between 06:00 am-08:00 am and another in the evening between 03:00-05:00 pm– would help increase the customer base and sales. Before

implementing the second delivery slot, a detailed cost-benefit analysis needs to be carried out.

COHORT 2 INSIGHTS

When looking at all the platforms apart from the e-grocer, the factor that has a low level of satisfaction among participants is that of "product delivered on time but not good quality (refer to table 4). Hence the e-grocer in focus should compete on quality. The communications to the markets should focus on this aspect as their USP. This will encourage customers of other platforms to switch to the e-grocer in focus.

According to our research, the collective response from participants on a lower level of satisfaction is the availability of offers (refer to table 4). This states that most of the platforms are offering very few offers on milk as a product. Hence the e-grocer can use multiple offers and schemes in the milk product category. This will eventually act as a point of differentiation.

COHORT 3 INSIGHTS

Nowadays, e-commerce platforms are also increasingly coming out with traditional brick-and-mortar stores. This will enhance customer experience and retention. According to our research, for customers in cohort 3, who don't prefer to buy anything online, the barriers to buying products online are fear of getting stale milk, fear of delayed delivery of milk, and trust issues. Hence the e-grocer can overcome them by adopting an omnichannel milk distribution system.

Physical stores in kiosks will help capture a broader customer base from this specific cohort. This will help customers exchange products easily by visiting the nearby kiosks if they receive a stale product. These physical stores give a physical identity to the virtual online platforms, which will enhance the trust of the customers of cohort 3 about online delivery platforms. But, brick-and-mortar stores come with a cost. Hence, the cost associated with coming out with a brick-and-mortar store has to be compared with the revenue that the store is expected to generate.

CONCLUSION

The boom in the Indian e-grocery market has led to various players competing against each other.minimalery limited time to experiment and execute new ideas in their daily operations. By following some of the actionable insights in this paper, e-grocers can distinguish themselves from their competition. These insights are derived from data collected directly from the consumers. Our analysis indicates that there are a lot of miscommunications that occur during online delivery essentials. As an outcome of the study conducted, embracing an active chat system will aid in mitigating the communication gap that exists. Subsequently, the entity can go one step further and collect required feedback, which will further help in improving customer satisfaction levels. Advocacy of these actionable insights by e-grocers will further help in the widespread adoption of them in different areas of the e-commerce industry.

AUTHORS

				
Deepakh Kannan	**Akash MH**	**Gayathri Gothandapani**	**Dineshwar Annadurai**	**Poornima Sai**

This Whitepaper is based on a capstone project undertaken by Deepakh Kannan, Akash MH, Gayathri Gothandapani, Dineshwar Annadurai and Poornima Sai of PGDM 2020-22 Batch as a requirement for the fulfilment of the Career Track Program in Martech, offered at Jagdish Sheth School of Management in partnership with Darden School of Business, University of Virginia. Students received inputs from Dr. M. Sivagnanasundaram, Chairperson- Marketing Area, Jagdish Sheth School of Management.

SKU LABEL IDENTIFICATION FOR RETAIL STORE USING COMPUTER VISION AND DEEP LEARNING

ABHIJEET GODARA
ANIL REDDY MADDI
UDAY KIRAN REDDY POREDDY
BARATH KUMAR

ABSTRACT

We apply a convolutional neural network (CNN) to detecting and recognizing food images. Image processing is widely used for food recognition. In this paper, we use a smooth and one of the ultimate effective machine learning methods from deep learning to make and classify various classifications of food items. We apply a convolutional neural network (CNN) to detecting and recognizing food items. Unlike typical artificial neural networks, Convolutional neural networks can estimate the score function directly from image pixels. A two-dimensional convolution layer was used, generating a convolution kernel convolved with the layer input to form a tensor of outputs. The data is also processed using the Max-Pooling function, and the features produced from this function are used to train the network. In this paper, we explore the problem of food image classification through training convolutional neural networks, both from scratch and with pre-trained weights learned on a larger image dataset (transfer learning), achieving an accuracy of 61.4% and top-5 accuracy of 85.2%.

INTRODUCTION

Customer experience and Product management are the most important things in retail stores. Grocery management is evolving in the digital era. Many

technologies are introduced in retail stores to enhance customer experience and grocery management. Amazon Go Seattle store is a perfect example of how advanced technology is used in retail stores. As the retail industry is evolving rapidly, companies are focusing on using technological applications like Artificial Intelligence, Computer vision, etc., for more efficient grocery management and productivity. Furthermore, product image digital resources are developing rapidly every day because of numerous electronic gadgets used in retail stores. As a result, properly analyzing and processing large amounts of visual data and identifying and classifying products in supermarkets has become an important research topic in the product recognition sector.

SKU

Stock Keeping Unit is a distinct item for sale, such as a product or service, and any additional characteristics that separate the item kind from others. SKU is a unique identifier or code represented as a barcode for scanning and tracking. A stock-keeping unit (SKU) is a scannable bar code that allows suppliers to track inventory movement automatically. SKUs also identify units of repair time, services, and warranties.

DEEP LEARNING

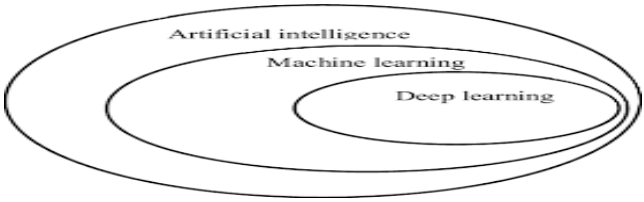


FIGURE 1: VENN DIAGRAM OF ARTIFICIAL INTELLIGENCE, MACHINE LEARNING, AND DEEP LEARNING.

Source: Data Science in Julia for Hackers

Machine Learning is a subset of Artificial Intelligence, and Deep Learning is a subset of Machine Learning.

ARTIFICIAL INTELLIGENCE

Artificial intelligence is any task performed by a machine that would have previously been considered to require human intelligence. AI is ubiquitous, and its applications include advanced web search engines, recommendation systems, understanding human speech, self-driving cars, automated decision-making, etc. Artificial intelligence (AI) has long been viewed as a potential source of commercial innovation. Organizations are beginning to grasp how AI can multiply its value now that the enablers are in place. Business operations benefit from automation because it reduces costs and improves consistency, speed, and scalability.

MACHINE LEARNING

Machine learning (ML) implements artificial intelligence (AI) with several software programs. The applications will show how to improve prediction accuracy specific to ML software. Essentially, there are two types of ML software: Supervised and Unsupervised. ML enables computers to learn independently, without the need for human involvement, and to change their behavior accordingly.

SOME MACHINE LEARNING METHODS

SUPERVISED MACHINE LEARNING

Supervised machine learning algorithms can use labeled examples to apply what they've learned in the past to new data and predict future events. After sufficient training, the system will be able to provide targets for any historical data. The learning algorithm can also compare its output to the correct, intended output and detect faults, modifying the model.

UNSUPERVISED MACHINE LEARNING

Unsupervised machine learning algorithms are used when the information used to train is neither classified nor labeled. The system defines a function to describe a hidden structure from unlabeled data. It does not predict correct output; it explores data and can draw inferences from datasets to describe hidden structures from unlabeled data.

SEMI-SUPERVISED MACHINE LEARNING

Supervised and unsupervised learning use labeled and unlabeled data for training. When the collected, labeled data requires experienced and appropriate resources to train/learn from, semi-supervised learning is used.

DEEP LEARNING

Deep Learning is a subset of the Supervised Machine Learning technique, essentially a neural network with three or more layers. It uses Artificial intelligence and Machine Learning concepts and techniques. Deep learning is a type of machine learning and artificial intelligence (AI) that imitates the way humans gain certain kinds of knowledge, which is essentially a neural network with three or more layers. It distinguishes itself from classical machine learning by the type of data that it works with and the methods in which it learns. It eliminates some of the data pre-processing that is involved with machine learning. This algorithm processes unstructured data like images and text and automates feature extraction to determine which features are important for classification. It has the ability to handle a large amount of data.

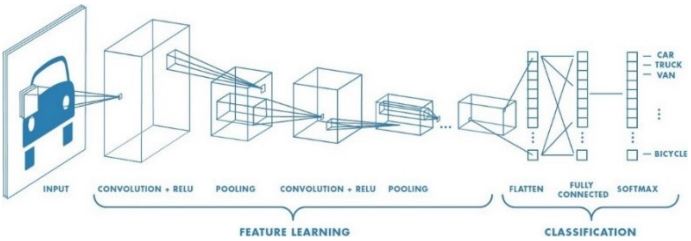


FIGURE 2: CONVOLUTION NEURAL NETWORK (CNN) ARCHITECTURE

Source: 'run.ai'.website

CONVOLUTIONAL NEURAL NETWORK

CNN is one of the most popular deep neural network algorithms to analyze unstructured data like image datasets. It uses a technique called convolution (different from procedures based on matrix multiplication). Convolutional neural networks are composed of multiple layers of artificial neurons. Artificial neurons, a rough imitation of their biological counterparts, are mathematical functions that calculate the weighted sum of multiple inputs and output an activation value. The first layer usually extracts basic features such as horizontal or diagonal edges. This output is passed on to the next layer, which detects more complex features such as corners or combinational edges. As we move deeper into the network, it can identify even more complex features such as objects, faces, etc.

PROJECT DESCRIPTION

A grocery retail store in Bengaluru that sells grocery items wants to automate the process of figuring out the item vacancies in the racks and then immediately report them to the respective departments requesting a rack-refill or reorder of the items. Product stockout in a retail store leads to loss of sales (or customers) and revenue. Stockouts may also imply inefficient use of shelf space in a physical store.

The student team tasked with this problem is given a dataset consisting of 10 different classes of groceries. The process involves classifying various images of missing items into other food classes.

To detect stockouts from empty shelves, a retail store wants the team to identify the item SKU vacancies in the racks automated and immediately report them to the respective departments requesting a rack refill. The unit uses deep learning algorithms for computer vision for this purpose.

TECHNOLOGY AND ALGORITHM USED

For this project, the team decided to use **Convolutional Neural Networks (CNN)**, a family of deep learning algorithms used for Computer Vision. The implementation was in Tensorflow and Keras using Google Colab.

DATA SUMMARY

The project was to classify various images of grocery food items into ten different food classes. The team divided the data set of 2049 images into two subsets of 1840 images for training the CNN and 209 images for the validation test.

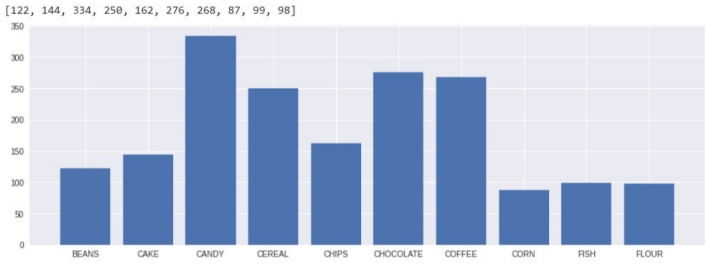


FIGURE 3: TRAINING DATA DISTRIBUTION

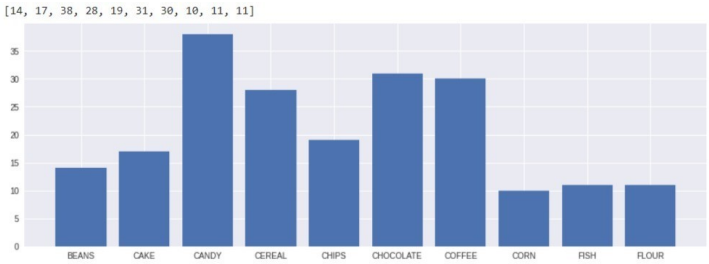


FIGURE 4: TEST DATA DISTRIBUTION

Feature extraction is employed to spot the interesting patterns of a picture that may be distinctive to the category, which may later help the model differentiate between different categories.

CNN is comprised of 2 main components, specifically the convolutional layer and pooling layer. CNN is widely used because it convolutes pictures and filters to get invariant features passed on to the ensuing layer. The simplest factor is that there's no requirement for feature extraction.

IMAGE AUGMENTATION

A deep learning model generally works well with a huge amount of data. In general, the more data we have better will be the performance of the model. With the increase in data size performance of the model also increases. Image Rotation, Image shifting, Image Flipping, and Image Noising are different types of Image Augmentation processes. When the dataset is small to train a deep learning model, image augmentation is an effective technique to increase the dataset for more accuracy. Dataset can be increased using the same images using horizontal, vertical flips, adjusting zoom and sheer ranges.

TRANSFER LEARNING

Transfer learning is the idea of overcoming the isolated learning paradigm and utilizing knowledge acquired for one task to solve related ones. The reason for using transfer learning, especially considering the context of deep learning, is that most models that solve complex problems need a lot of data, and getting vast amounts of labeled data for supervised models can be difficult, considering the time and effort it takes to label data points. Transfer learning should enable us to utilize knowledge from previously learned tasks and apply them to newer, related ones.

IMPLEMENTATION AND RESULTS

The team built a simple layer model in the first step but did not reach the desired accuracy. In the next step to enhance accuracy, the team trained the model using the image augmentation process. The team used different parameters like horizontal flip, vertical flip, zoom range, and sheer range to increase the data size and trained our model with the new augmented dataset. Then the accuracy reached 92% on training data and 30% on test data.

As this accuracy was not satisfactory, we wanted to experiment with the Transfer Learning technique to increase the accuracy levels even more. First, we implemented VGG-16 with ImageNet weights and fine-tuned the model according to our dataset. We used InceptionV3 with the same ImageNet weights to decrease trainable parameters and computational load at the next level. We finally achieved an accuracy of 92% on training data and 84% on testing from the InceptionV3 transfer learning technique.

Feedback on various parameters shows a high engagement level (94%).

LEARNING OUTCOMES

- How to build CNN architecture.
- Deep Learning Concepts
- Activation Functions
- Optimizers.

AUTHORS

 **Abhijeet Godara**	 **Anil Reddy Maddi**	 **Uday Kiran Reddy Poreddy**	 **Barath Kumar**

This project was supported by JAGSoM, Bangalore. The authors thank INSOFE for providing their insights and guiding the project. The authors wish to also thank Dr. Supriyo Ghose, Professor and Chairperson, Digital Business and Analytics, JAGSoM, Bengaluru for organizing and structuring the Career Track Program with INSOFE, and Dr. Sreerama K. Murthy, Professor (INSOFE) for sharing his experience with the group during this project. The authors are immensely grateful to Prof. Vithala R. Rao, Mentor for the Centre for Business Analytics at JAGSoM, for giving feedback and comments on this Machine Learning project and White paper.

DIGITAL ORIGINATION AND ON-BOARDING OF MSME CLIENTS IN INDIA FOR BUSINESS LOANS

TARA PRASAD MUND
SHREYA MUKHERJEE
DIPANWITA JANA
KORITALA JAGADEESH PRASAD
PRIYANSHU JAIN
KALYANI PILLI
NISHANT KUMAR SINGH

ABSTRACT

Digital origination and onboarding of MSME clients for loans is an evolving space in India. Edelweiss should have a competitive edge over the other players in terms of processing fees, pre-closure charges, flexible repayment options, lower interest rates, and faster loan sanctioning to compete with other market players. Edelweiss should focus on Content Marketing over multiple social media platforms breaking down the process into simple steps. The project involved using primary and secondary data to find the best solution for a smooth digital onboarding and loan process. SPSS software was used and performed the chi-square test on several parameters and interpreted the results and suggestions are based on these results, which Edelweiss Finance should adopt to achieve market penetration and create a large customer base.

BACKGROUND

Digital loans offer loans that are requested, paid, and managed through digital channels. Lenders use digitized data to make loan opinions and make client fidelity intelligently. Digital lending helps meet huge unmet credit requirements, particularly in India's micro-business and low-income consumer segment. It helps reduce informal borrowing as it simplifies the borrowing process. Indians continue to adopt from family, musketeers, and

moneylenders, occasionally at erroneously high- interest rates, mainly because these loans are more flexible and accessible.

Digital advancing platforms are also known to reduce outflow costs by 30-50%. The value of the digital loan increased from $ 33 billion in 2015 to$ 150 billion in 2020 and is anticipated to reach the $ 350 billion mark by Financial Year 2023.

Our “Request for Problem” (RFP) design with Edelweiss Finance deals with “Digital Origination and Onboarding of MSME Clients in India for Business Loans.”

Edelweiss is one of India's driving monetary administrations aggregates, offering a vigorous stage to a differentiated customer base across homegrown and worldwide topographies. Their constant and determined spotlight is on understanding clients' necessities and delivering the proper monetary arrangements. Present in each economic life phase of a client, assisting them with making riches, developing abundance, and ensuring everything are their critical lines of business.

- Credit (Retail, Corporate)
- Venture and Advisory (Wealth Management, Asset Management)
- Protection (Life, General)

This differentiated plan of action mirrors their experience across India's numerous businesses, from modern behemoths and enormous organizations to independent. Their 1.2 million customer base is overhauled through an organization of more than 476 workplaces, with nearly 11,000 representatives. Along with a solid organization of Sub-Brokers and Authorized Persons, the Group has a presence across all significant urban areas in India.

Its organizations are comprehensively partitioned into Credit (counting Retail Finance and Debt Capital Markets), Financial Markets (estimating Asset Management), Commodities, and Life Insurance.

Edelweiss' quality currently covers 211 workplaces in 106 urban communities in India and abroad with 3,907 representatives. Along with 4,003 in number

organization of Sub-Brokers and Authorized Persons, Edelweiss bunch has a presence across almost 545 urban communities in India, obliging more than 450,000 customers across different organizations in retail and wholesale sections.

CONTEXT OF THE PROBLEM / PROJECT

The problem in front of NBFCs is how to provide the customers with a seamless digital experience, improve customer loyalty, and increase trust through the Internet Information Pull Service, cost-effective internet transactions, internet banking payments, and loans, access to remote areas, and provision of services via the internet mediation portal.

While doing our research, we have found some common problems associated with MSME loans being rejected. Some of the reasons behind loans being rejected are borrowers' low credit scores, which indicates that they cannot manage their budget efficiently. Another reason why their loan applications get rejected is because the borrower has a negative cash flow, meaning that their expenses exceed their income. Unpaid debts of the borrower are also an essential component for banks while approving one’s loan application. Many MSME loan borrowers face the most common problem: they lack proper documentation.

Considering all the issues that we had discovered, we worked on forming a solution that would help both borrowers and lenders. There are ways in which Edelweiss can improve the customer experience while also being able to approve more loans. The main reason why loans were rejected was a disconnect between the portal’s approval methods and the banks. Due to this, a solution that we would suggest is to form a portal that functions more efficiently without having unnecessary gimmicks.

OBJECTIVES

The objectives of the project have been as under:

(1) Detailed customer value proposition for DIY digital lending with identified target segments within the target groups.

(2) Business Plan with detailed unit economics.

(3) Granular customer journeys with failure scenarios and mitigants

(4) User Interface and Experience

(5) Comparative analysis and recommendation of various sources/ media/ channels of digital sourcing.

(6) Benchmarking with MSME leading players

Objective-1: For this objective, we have researched the ideal digital lending customer journey, Components, model, process, and key-value proposition. We have seen the factors affecting the digital lending process, checkpoints before sanctioning the loan, friction points, and how technology can take a crucial role in the digital lending process.

Objective-2: To implement any business, various costs need to be managed. In this digital lending process, the Customer acquisition cost is essential. To acquire the customers, Edelweiss may have to incur the charge of promotional activities, online expenses like internet and voice assistant, pricing incentives, product fulfillment, and Data and analysis on modeling credit risk.

Objective-3: It covers the reasons behind the rejection of the MSME loans, how to improve the 59mins loan scheme, and the Mitigants of loan rejection.

Objective-4: It includes the seamless digital lending process and step-by-step process from onboarding to application, approval, disbursement, and collection. It also looks at the collection issues and how to fix them.

Objective-5: There are various digital making options available in the market, but for Edelweiss, some specific choices will impact the most. It includes Pay per Click and email marketing.

Objective-6: We compared Edelweiss Finance with some Indian and Global players like Lendingkart, Tata Capital, Aditya Birla Capital, Fullerton India, IDFC First Bank, Shriram City, Ugro Capital, SME Corner, Capital Float, Indostar Capital, Clix Capital, Credit Enable and Flexi Loans on specific loan parameters like Loan Amount, Loan Type, Collateral, Customized Interest Rates, Repayment Tenure, Application medium, Loan Approval, Disbursement, Processing Fees, Pre-closure Charges, Eligibility Criteria, and Instalments. These parameters helped in finding out the area of competitive advantages.

METHODOLOGY

The project involved using primary and secondary data to find the best solution for a smooth digital onboarding and loan process. The primary and secondary research provides the best solution for a smooth digital onboarding and credit process while avoiding Direct Selling Agents (DSAs). And what is the best way to get MSME customers with the help of digital marketing platforms? To use UI/UX for a seamless digital experience.

As a part of primary data collection, we had a structured questionnaire for MSME customers to know their preferences in applying for an MSME loan and to know the higher percentage of loans taken by visiting the financial institution compared through an online platform and direct selling agents. We have created a google form with a few questions related to MSME loans. We administered a questionnaire to small business owners and traders. We were able to collect about 250 responses overall.

The collection of secondary data thorough literature review was done where we come with different aspects of the digital lending process for the MSME sector such as understanding client perception, understanding the trouble shots in the journey, and the necessary mitigation measures, ideas for a customer acquisition strategy and a digital marketing platform for customer acquisition.

We followed the data collection by analyzing data through SPSS to see the relationship between the independent and dependent variables. We have

used SPSS software and performed the chi-square test on several parameters, interpreted the results, and made a few suggestions based on those results through which Edelweiss finance can achieve market penetration and create a new customer base.

One of the primary key challenges that we faced was finding out accurately the relationship between the different variables we had chosen, which meant doing trials with different types of tests on SPSS to appropriately determine why borrowers were hesitant in applying for MSME loans was.

We first learned about the loan sanctioning process of other lending firms, studied them, and came up with a step-by-step approach for Detailed customer value proposition for DIY digital lending with identified target segments within the target groups, including customer journey digital lending model and process. New technologies which are adaptive for this lending platform have also been given. Various business plans and strategies were discussed and finally planned to achieve market penetration and customer satisfaction.

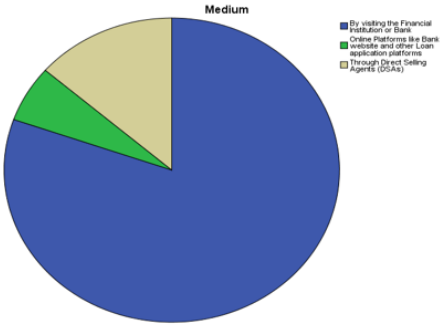
We have done a Comparative analysis with other lending platforms to know the limitations and solutions. We compared Edelweiss with some Indian and global players on specific parameters, which helped determine the area of competitive advantages and where Edelweiss can rework to attract customers and create a new customer base.

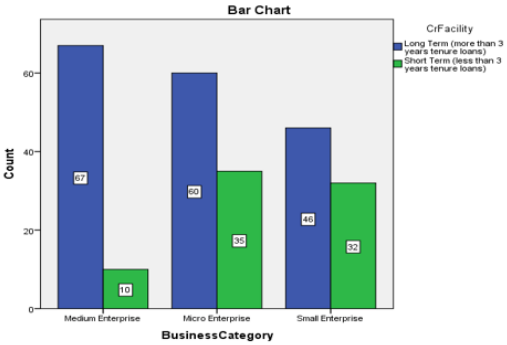
FINDINGS & DISCUSSION

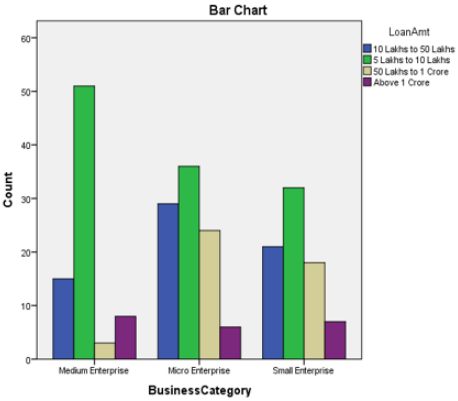
- Approximately 70% of MSME players need long-term loans.
- Most MSMEs require loans between Rs 5 Lakhs to Rs 10 Lakhs and Rs 10 Lakhs to Rs 50 Lakhs.
- Loan application by visiting the financial institution is much higher than online platforms and direct selling agents.
- Most MSMEs are attracted to extended repayment tenure and lower interest rates. Also, some MSMEs need the time taken to reduce loan sanctioning.

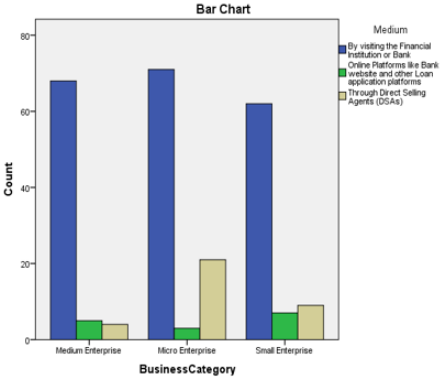
- The difficulties faced by the MSMEs during applying for loans are mostly lack of collateral, lack of trust, and lack of understanding of financial products. MSMEs need guidance in all these aspects.

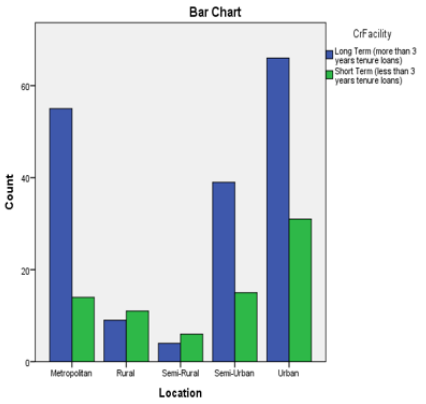
Below are some graphs from the analysis.

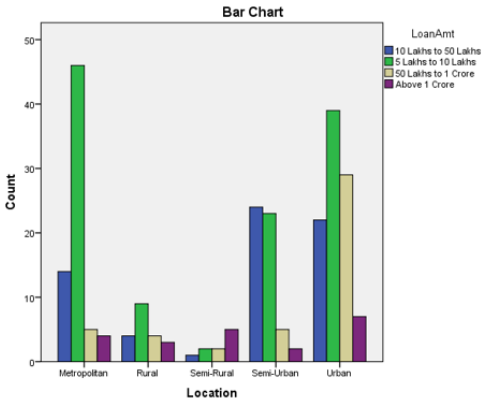












There is scope for improvement, and the action points help Edelweiss Finance create a customer base and onboard customers to the digital lending platform. To compete with other market players, Edelweiss should make the below strategy:

- Edelweiss should keep the processing fees up to a minimum rate of 1.5% to 2%, which will attract the MSME clients to switch to Edelweiss's digital lending platform.
- Edelweiss should not impose any pre-closure charges, which will attract clients, and Edelweiss can gain a competitive advantage over others.
- Edelweiss should give the option of flexible repayment of monthly or bi-weekly loans as per the client's preference.
- Edelweiss should keep the interest rate minimal between 12% to 18% to compete with the market players.
- Edelweiss should approve the loans on the same day, and the disbursement should be faster than other players.
- Edelweiss should give sufficient repayment tenure of up to 4 years to gain competitive advantages over other market players like Aditya Birla Capital, Flexi Loans, etc.

- Edelweiss should focus on Content Marketing over multiple social media platforms breaking down the process into simple steps.

- We propose that Edelweiss take a processing time of a week, which is still less than the traditional bank's 20-25 days, for each application.

- Additionally, we propose that the applicants get a small percentage of their application fees refunded if their loan is not approved through Edelweiss' portal. This will make the application process frictionless and make it accessible to everyone.

- We propose using voice assists and WhatsApp messaging bots to ensure that the customers can see the company's efforts in personalizing the experience for everyone.

KEY TAKEAWAYS

The most critical learning outcomes include

- Understanding customer perception
- Understanding fiction points in the digital lending journey
- Necessary mitigation measures
- Ideas for a customer acquisition strategy and,
- Digital marketing platform for customer acquisition.

CONCLUSION:

For understanding the digital origination and onboarding of MSME clients for loans, we examined various aspects, such as understanding client perception, understanding the trouble spots in the journey, the necessary mitigation measures, ideas for a customer acquisition strategy, and a digital marketing platform for customer acquisition. Our findings suggest that we can add value to the customer experience by adopting new technologies. The most crucial stage in any basic customer acquisition strategy is realizing the quality of the leads. The granular customer journey allowed us to discover the various error scenarios and create mitigations for these situations for the business. The user interface should be updated regularly as it needs to be up-to-date and easy to use. Digital marketing has multiple touchpoints where one can build and deepen customer relationships. This even allows us to see how the audience interacts with the brand. To conclude, this was a great learning experience. We achieved the goal by finding suitable solutions for a smooth digital onboarding and lending process by avoiding direct selling agents (DSA) with the best way to attract MSME clients with the help of a digital marketing platform.

SELECT REFERENCES

IDFC FIRST Bank. (2020, 04 20). *IDFC First Bank Startup and SME loans*. Retrieved from IDFC First Bank: https://www.idfcfirstbank.com/knowledge-resources/difference-between-start-up-and-sme-loan.html

Aditya Birla Capital Ltd. (2020, 02 29). *SME Finance - Aditya Birla Capital*. Retrieved from Aditya Birla Finance: https://smefinance.adityabirlacapital.com/Pages/Individual/Products/Overview.aspx

Amy Stewart, K. Y. (2018). Demystifying Digital Lending. *Accion Insights*. Retrieved from https://www.findevgateway.org/sites/default/files/publications/files/1123_digital_lending_r10_print_ready.pdf

BankBazaar. (2021). *BankBazaar DSA Loans.* Retrieved from BankBazaar: https://www.bankbazaar.com/personal-loan/dsa-loan.html

BankBazaar.com. (2021). *BankBazaar.com*. Retrieved from BankBazaar.com: https://www.bankbazaar.com/personal-loan/microfinance-institutions.html

Bree, J. D. (2016). *The pros & cons of small-business loans.* Inside Small Business. Retrieved from https://insidesmallbusiness.com.au/finance/the-pros-cons-of-small-business-loans

Budde, Y. V. (2015). Banking Technology Innovations in India: Enhancing Customer Value and Satisfaction. *Indian Journal of Science and Technology, 8*(33), 1-10. doi:10.17485/ijst/2015/v8i33/78280

CapFloat Financial Services Private Limited. (2020, 09 05). *Capital Float SME-MSME Loans*. Retrieved from Capital Float: https://capitalfloat.com/sme-msme-loans/

Clix Capital. (2020, 06 09). *Clix Capital business Loans*. Retrieved from Clix Capital: https://www.clix.capital/business-loan/

CreditEnable. (2021, 10). *CreditEnable Lenders*. Retrieved from CreditEnable: https://www.creditenable.com/in/lenders/?utm_source=Google_Paid&utm_medium=search&utm_campaign=catkeyword

Dhanalakshmi Arumugam Malar, V. A. (2019). Digital Transformation in Banking: Exploring Value Co-Creation in Online Banking Services in India. *Journal of Global Information Technology Management, 22*(12), 1-18. doi:10.1080/1097198X.2019.1567216

Digikredit Finance Pvt. Ltd. (2021, 04 22). *SMECorner-unsecured business loans*. Retrieved from SME Corner: https://www.smecorner.com/unsecured-business-loans/

Edelweiss Retail Finance Limited. (2016). *Edelweiss Retail Fin-SME Loans*. Retrieved from Edelweiss Retail Finance Limited: https://www.edelweissretailfin.com/sme-loan/

Finance Dragon. (2021, 08 20). *Finance dragon MSME loans IDFC First Bank MSME Loans*. Retrieved from Finance Dragon - IDFC First Bank: https://financedragon.com/msme-loans/idfc-first-bank-msme-loans/

Flexiloans. (2021, 09 15). *Flexiloans term loans*. Retrieved from Flexiloans: https://flexiloans.com/term-loan

Fullerton India. (2021, 08 10). *Fullerton India SME-MSME Loan*. Retrieved from Fullerton India: https://www.fullertonindia.com/sme-msme-loan.aspx

GBIM. (n.d.). *How demonetisation affects the digital economy in India.* GBIM. Retrieved from https://www.gbim.com/demonetisation-affects-digital-economy-india/

IndoStar Capital Finance Limited. (2021, 11 10). *IndoStar Capital SME Finance*. Retrieved from IndoStar Capital Finance Limited: https://www.indostarcapital.com/sme-finance

Kindervater, D. (2018). Loan Companies: 8 Personal Loan Marketing Ideas. *MSP*. Retrieved from https://www.msp-pgh.com/personal-loan-marketing-ideas-for-loan-companies/

KUMBHAR, V. M. (2011). Factors Affecting On Customers' Satisfaction In E-Banking: Some Evidences Form Indian Banks. In V. M. KUMBHAR, *Management Research and Practice* (4 ed., Vol. 3, pp. 1-14). Bucharest, Romania: Research Centre in Public Administration and Public Services. Retrieved from https://ideas.repec.org/a/rom/mrpase/v3y2011i4p1-14.html

Leadsquared. (2021, 11 17). *Leadsquared Digital Lending.* Retrieved from Leadsquared: https://www.leadsquared.com/digital-lending-market/

Lendingkart Technologies Pvt. Ltd. (2021, 08 04). *Lendingkart MSME Loans*. Retrieved from LendingKart: https://www.lendingkart.com/msme-loan/

Marous, J. (2018). 10 Technologies That Will Disrupt Financial Services In The Next 5 Years. *The Financial Brand*. Retrieved from https://thefinancialbrand.com/77228/technology-trends-disrupting-financial-services-banking-future/

McCarthy, K. (n.d.). Digital Marketing Channels: The 7 Most Essential. *act-on*. Retrieved from https://act-on.com/blog/digital-marketing-7-essential-channels/

McKinsey & Company. (2020). *How COVID-19 has pushed companies over the technology tipping point—and transformed business forever.* McKinsey & Company. Retrieved from https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever

Ministry of Micro,Small & Medium Enterprises. (2015, 03 02). *Ministry of Micro,Small & Medium Enterprises.* Retrieved from Ministry of Micro,Small & Medium Enterprises: https://pib.gov.in/newsite/PrintRelease.aspx?relid=116244

Money Control. (2021). *moneycontrol.com*. Retrieved from moneycontrol.com: https://www.moneycontrol.com/competition/edelweissfinancialservices/comparison/EC01

MoneyLife. (2019). Loan in 59 Minutes: Indian Bank has Rejected 77% of Applications, SBI 48%. *MoneyLife*. Retrieved from https://www.moneylife.in/article/loan-in-59-minutes-indian-bank-has-rejected-77-percentage-of-applications-sbi-48-percentage/56871.html

Nayyar, A. K. (2021). *How Digital Lending Can Accelerate the Growth of Small Businesses.* Outlook Money. Retrieved from https://www.outlookindia.com/outlookmoney/fintech/how-digital-lending-can-accelerate-the-growth-of-small-businesses-8131

Nicolas Maechler, J. M. (2018, 10 09). *https://www.mckinsey.com/.* Retrieved from https://www.mckinsey.com/: https://www.mckinsey.com/industries/financial-services/our-insights/managing-a-customer-experience-transformation-in-banking

online psb loans limited. (2021). *https://www.psbloansin59minutes.com/*. Retrieved from https://www.psbloansin59minutes.com/: https://www.psbloansin59minutes.com/business-loan

Parthasarathy, M. (2021). Enhancing Customer Experience through Loan Origination System. *LinkedIn*. Retrieved from https://www.linkedin.com/pulse/enhancing-customer-experience-through-loan-system-mani-parthasarathy/

ROY, S. (2011). *MSME funding: banks need to design client-specific products.* The Hindu. Retrieved from https://www.thehindu.com/business/msme-funding-banks-need-to-design-clientspecific-products/article2235873.ece

Shah, J. (2021, 04 14). We want to double MSME loans under SIDBI's 59-min scheme in 2021: Online PSB Loans'. (F. E. Online, Interviewer) Retrieved from https://www.financialexpress.com/industry/sme/cafe-sme/msme-fin-interview-we-want-to-double-msme-loans-under-sidbis-59-min-scheme-in-2021-online-psb-loans-jinand-shah/2233283/

Shriram City Union Finance Ltd. (2021, 06 29). *Shriram City Business Loan*. Retrieved from Shriram City Union Finance Ltd.: https://www.shriramcity.in/business-loan

Tata Capital Financial Services Limited. (2021, 10 20). *Tata Capital - Business Loans/MSME Loans.* Retrieved from Tata Capital: https://www.tatacapital.com/business-loan/msme-sme-loan.html

TIBURCA, H. (2019). 30 Creative Financial Services Ad Examples for Your Inspiration. *Creatopy*. Retrieved from https://www.creatopy.com/blog/financial-services-ad-examples/

U GRO Capital. (2019, 09 10). *U GRO Capital Business loans*. Retrieved from U GRO Capital: https://www.ugrocapital.com/

Verkhovodov, A. (2019). *Creating a banking value proposition for SMEs.* Retrieved from https://medium.com/@untone/creating-a-banking-value-proposition-for-smes-30b885d4737a

AUTHORS

Tara Prasad Mund

Shreya Mukherjee

Priyanshu Jain

Dipanwita Jana

Koritala Jagadessh

Kalyani Pilli

Nishant Kr. Singh

This white paper is based on the Request for Problem project undertaken by Tara Prasad Mund, Shreya Mukherjee, Priyanshu Jain, Dipanwita Jana, Koritala Jagadeesh Prasad, Kalyani Pilli, and Nishant Kumar Singh of PGDM 2020-22 Batch, as a requirement of fulfilment of Career Track Program in Banking, offered at Jagdish Sheth School of Management in partnership with Indian Institute of banking and Finance (IIBF). Students received guidance and feedback from Dr. Rajendra K Sinha, Professor & Chairperson, Centre of Excellence in Banking, Jagdish Sheth School of Management. Prof. Rajesh Kumar, Associate Professor, Jagdish Sheth School of Management guided the group on marketing objectives.

DEVELOPING DESIRABILITY INDEX FOR LUXURY HOMES

SIBIYA CHINNADURAI
SAKSHI GUPTA
AVOLUPATTI SUNEEL KUMAR
KOTTI VENKATA SRIKRISHNA

ABSTRACT

A lovely home is something that every human desires. The affluent consumers always look for an edge in whatever they choose, and they are very particular about their choice. Their expectations are limitless in terms of the house they will be residing in. Therefore, a very challenging task for developers is understanding the consumer's changing expectations and increasing the saleability of dwellings.

Therefore, we started working on this project with a reputed developer from south India to develop an index that will help arrive at the consumer desirability of luxury homes. We conducted a survey with the affluent-customer segment and received 30 responses. We used Analytical Hierarchy Process (AHP) to develop the consumer desirability index. The insights from this project shall help the developers understand their customers better and design more saleable products.

BACKGROUND

INDUSTRY OVERVIEW – LUXURY HOMES

From a global perspective, Luxury homes can be defined in different ways. For example, in Houston, Texas, there is a massive demand for Smart Homes among luxury home buyers; in Ireland, high-end customers look for an estate with large acreage (around 30+ acres) and still want to be within a 20-minute drive from the city; in Cape Town, buyers look for homes that can provide

green energy with water-saving devices to reduce their mental stress due to climate-change worries. One of the unique demands is from Portland, Oregon, where luxury-home buyers look for a house design conducive to showing off their wine collection and controlling the temperature, lighting, music, and overall ambiance.

Like other countries, India too has its perspective on Luxury homes, and it changes from time to time. Consumers are primarily looking for features like swimming pools, balconies with expansive views, game rooms, gymnasium/recreational spaces, etc. These house features are now a part of the 'expected product' for entering into the class of luxury.

Indian cities are becoming increasingly overcrowded and dense with new buildings. Therefore, greenery is rarely found, hence making it a luxury. Biophilic designs are trendy right now, and many luxury home builders are exploring this option to lure new customers.

Like Indian diversity, the demand for amenities is quite different in cities like Mumbai, South Delhi, Hyderabad, Bangalore, and Kolkata. The success of any luxury project depends on selecting the right customer profile that matches the end product.

The growing number of HNWIs (High-net-worth individuals), rapid urbanization, the introduction of global lifestyle trends, and the boom in technology and financial service industries have increased the demand for luxurious homes. We think about lavishness and magnificent property with high pricing whenever we discuss luxury homes. But the epitome of an elegant home is not just a well-appointed home; instead, it is one whose amenities allow the owner to feel lavished upon or spoiled. Luxury homes have many unique features that distinguish them from other properties.

No matter the economic condition, some people are not just searching for homes but are also looking to buy homes that have the essence of luxury. There is a constant increase in the demand to buy luxurious homes or apartments in Bangalore or any other metropolitan city. The buyers expect more than just four walls and a parking lot. An ample amount of space is required to accommodate life's luxurious amenities like a state of the art

security, walk-in wardrobes, spa bathrooms, king/queen size bedroom, etc., besides location.

MARKET GROWTH

The sale of luxury homes in the seven major markets in India comprises Delhi-NCR, Mumbai, Pune, Bengaluru, Hyderabad, Chennai, and Kolkata, which has risen by 21% in February 2021 to 8,219 units from 6,789 units a year ago following greater demand for larger space due to the covid-19 pandemic (A report by real estate analytics platform Prop Equity). Delhi (NCR) has been the biggest beneficiary of this trend as it recorded an increase of 54% in luxury housing sales (during the period 2020-2021), followed by Mumbai.

A 40% growth is expected in revenue during the fiscal year (2020-21) as the demand for ultra-luxury homes priced above five crores has increased steadily in recent months.

Luxury properties in Tier-one cities like Delhi (NCR), Mumbai, Kolkata, and Bangalore and destinations at hill stations and by the beaches have garnered interest from both domestic and NRI buyers.

There has been a reduction in the interest rates for housing loans, with premier lending institutions offering attractive home loan options in the range of 6.75% to 7.5%. There has been a considerable reduction in stamp duty as well. These two factors contribute to the increase in the demand for luxury homes.

According to the report published by financial express (*Exhibit 1*), the overall housing sales share of the top 8 listed realty players is increasing exponentially year after year. Of the total sales made in the first nine months of FY2021 across the top 7 cities, the top 8 listed players' share stood at 22%, while non-listed leading players' share was 18%. Non-branded developers (not a national brand) accounted for a 60% share.

PROJECT OBJECTIVE

As consumer tastes and preferences are constantly changing and evolving over the years, it is challenging for a luxury home builder to adapt and increase the saleability of their luxury-housing project. For example, any project will take at least a year or two to complete, but consumers' choices, tastes, and mindsets would have changed.

Therefore, luxury home developers need to understand and be aware of the amenities that affluent customers prefer. Our project focuses on *identifying the amenities desired by the affluent customer segment by developing a desirability index.*

The desirability Index is a measure to identify the saleability of a luxury home project. This index is based on the amenities available in a luxury home. The desirability index is constructed through two inputs: relative importance of amenity category over other categories (i.e., Sports amenities over Guest facilities) and ranking for an amenity under the category (e.g., customers ranking for various amenities like indoor games, squash court, golf course, skating, indoor golf simulator under sports category). The higher the score for a luxury home on the desirability index, the better will be its saleability.

PROBLEM STATEMENT

With the problem statement "How can we develop the desirability index for the luxury homes, with an understanding of affluent customers' changing preferences and social behavior," we started working on identifying the amenities that shall attract affluent customers.

After researching multiple projects across India like Brigade Enterprises, Godrej Properties, Kolte-Patil, Mahindra Lifespaces, Oberoi Realty, Prestige Estates, Puravankara, and Sobha, we segmented the luxury home projects based on price range and amenities. Refer to *Exhibit 2* for the list of projects researched, brochures the team collected for research, and the classification of these projects based on price range and their respective amenities.

APPROACH TO THE PROBLEM

The primary challenge is a gap between the customer expectations from a luxury home to the amenities/services offered by the luxury home builder. Addressing the challenge lies in understanding the amenities that affluent customers look for and their importance to the amenities.

Analytical Hierarchy Process (AHP) was used to analyze the affluent customer's choice as it can help in arriving at the importance attached to the amenities based on the preference for an amenity given by the respondent while comparing it with another amenity.

After interacting with many luxury home builders and based on their brochures in the public domain, we identified several unique amenities part of luxury home projects. Different builders used nomenclatures for the amenities (see Exhibit 3). After a thorough analysis, we have identified a standard nomenclature that will accommodate the amenities. For example, amenities such as indoor and outdoor play areas, walking tracks, cycling track, etc., are classified under the common category of "sports." The same methodology was adopted for other amenities as well. The final list of amenity categories that were considered for the study is as follows:

- Sports
- Recreational and entertainment
- Pool and spa
- Health and wellness
- Hangout space
- State of the art homes
- Guest and support staff amenities

Each of the above amenity categories includes unique amenities (refer to *Exhibit* 4). The data has been collected in two stages. The first stage relative importance of an amenity category on a nine-point scale was captured through a questionnaire (refer to *Exhibit* 5 for the questionnaire). In the

second stage, respondents were asked to rank the amenities within each amenity category (refer to *Exhibit* 6 for this ranking questionnaire).

RATIONALE

The primary objective was to find the desirability index, which shall help the developer understand the project's desirability from the consumer's perspective. This will help the developer in pricing and promoting of the project. The focus of this project was to understand the amenities that the affluent customers prefer that shall support the luxury home builders to increase their sales.

To collect the data, we employed judgemental sampling. We identified potential respondents likely to buy luxury homes through LinkedIn profiling. Refer to *Exhibit* 7 for the list of potential customers identified. After identifying 700 such potential customers, we requested them to participate in the survey through LinkedIn messaging. Refer to *Exhibit* 8 for the personal note sent on LinkedIn. Thirty customers responded positively to our survey, which formed the basis for further analysis.

SCOPE AND COVERAGE

The essential purpose of this project was to understand the amenities preferred by affluent customers in the Indian luxury-home market so that builders can offer those amenities and increase the saleability of the luxury homes they build. Because the data were collected only within India, the specific findings from this project are limited to the Indian context. However, the general methodology used in arriving at the desirability index to increase the saleability of luxury homes can be adapted to any international market. Moreover, the specific findings may be valid only for a limited period as innovations may lead to changes in customer preferences over the long term.

PROJECT EXECUTION

After developing the instruments for the data collection, we started our data collection through LinkedIn. We reached out to affluent customers by profiling them through social media. The criteria that were used for profiling are:

- Those are holding positions like Chairman, Managing Director, President, Vice President.
- Those who have membership in golf courses and other premium clubs.

THE AHP METHODOLOGY TO ARRIVE AT THE RELATIVE IMPORTANCE OF THE AMENITY CATEGORY

We used *Analytical Hierarchy Process* (AHP) to identify the relative importance weight of an amenity category. The AHP is a powerful yet simple method for making decisions. It is commonly used for project prioritization and selection. This tool is perfect for our project because it allows us to capture the strategic goals as a set of weighted criteria that can then be used to score projects.

The desirability index is constructed from the relative importance weight that is arrived at through AHP and the importance ranking given by the customers. The desirability index is arrived at for each luxury home project by multiplying the relative importance of each of the amenities present in the project with the rank of the amenity under that category.

For example, a project having amenities such as Indoor games, a mini theatre, a private pool, a world-class gym, a café, fully air-conditioned, and guest accommodation is the top-ranked amenities under the specific amenity categories viz. Sports, Recreational and Entertainment, Pool/Spa, Health and wellness, Hangout space, state of the art homes, Guest and support staff amenities, respectively.

Then desirability index for that project is arrived at as follows:

Amenity available	The relative importance of the category (weight arrived from AHP)	Ranking of the amenity under a category (reversed ranking)	The desirability for the amenity	Desirability Index
Indoor Games	0.20	5	1.02	
Mini Theatre	0.11	6	0.66	
Private Pool	0.18	5	0.90	
World-class gym	0.20	6	1.19	
Café	0.12	8	0.93	
Fully air-conditioned	0.10	4	0.42	
Guest Accommodation	0.09	3	0.26	
				5.37

The above is the maximum desirability index score a luxury home project can get. The projects that have other than these amenities will have reduced scores depending upon the ranking of the amenity under the category.

STEP BY STEP PROCESS TO ARRIVE AT THE RELATIVE IMPORTANCE

After collecting responses (refer to E*xhibit* 9), we started by calculating the desirability index. A step-by-step calculation with an example of amenities we chose for the project is given below:

Step 1: We created a consolidated matrix based on the geometric mean (refer to *table 1 in exhibit 10*) of relative importance weight obtained from each respondent through the AHP questionnaire (included in exhibit 5).

Step 2: Refer to table 3 for computation of each cell value for arriving at the critical weight for the amenity category. Each cell value in *table 3* is computed by dividing the geometric mean value of table 2 by the column total (obtained in *table 2*). The critical weight is the row total of the matrix given in table 3 divided by the number of amenity categories, i.e., 7.

Step 3: Using the reversed ranking method, the rankings given by respondents for each of the amenities under the amenity category are reversed. i.e., the amenity with rank 1 was offered the highest weight. The critical weight of the category value is multiplied with the reverse ranking of each of the amenities to arrive at the desirability value for the amenity. Refer to *table 4*.

For any luxury home project, an overall desirability value can be calculated by summing up the desirability values (arrived in step 3) for each of the amenities present in the project.

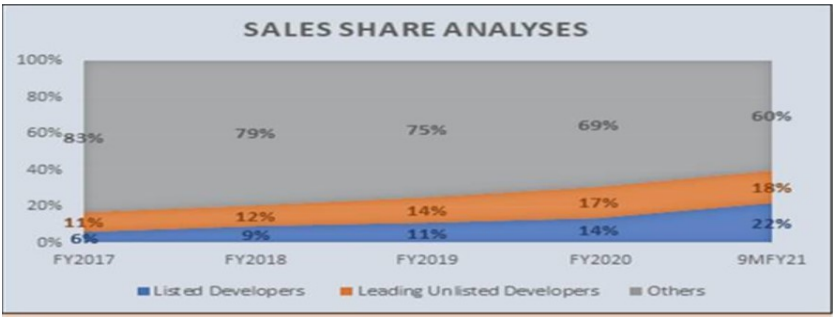
The project with all the first ranked amenities is considered the benchmark with an overall desirability value of 5.37. Treating this value as a reference for 100%, the desirability index percentage for other projects can be obtained. For example, the desirability index for a project with an overall desirability value of 4.95 can be arrived at by (4.95/5.37) *100, equal to 92.17%.

CONCLUSION

Based on the calculated desirability values of various amenities, luxury home builders can focus on providing the amenities that are preferred most by the customers. *The more the customers choose amenities provided by the developers, the more the project's desirability, which shall help the company increase* their luxury homes' saleability among affluent customers. However, the change in preferences of the wealthy customers might occur sooner than the time taken to complete a project. Therefore, we recommend that luxury home builders conduct such research from time to time.

ANNEXURES AND EXHIBITS

EXHIBIT 1



Source: Financial Express

EXHIBIT 2

List of Projects:

https://docs.google.com/spreadsheets/d/1DICdi0HdzFfTORGifYmCS1JI2I_PkKkf/edit#gid=1888610373

Brochures of different projects for research:
https://drive.google.com/file/d/17pgnLGK4emONi2IvlCwdtUvlx9EHXLnr/view?usp=sharing

Classification of the project:

Project Classification.xlsx - Google Sheets

EXHIBIT 3

The link given below is the worksheet we worked on for amenities:

Amenities List.xlsx - Google Sheets

EXHIBIT 4

Final 37 Amenities						
Sports	Recreational and entertainment	Pool/Spa	Health and wellness	Hangout Space	State of art homes	Guests and support staff amenities
Squash court	Amphitheatre	Sauna	Walking track on the terrace	Sky lounge	Home automation	Provision for creche
Indoor games room	Multipurpose hall	Private pool	World-class gym	Café	Fully air-conditioned	Servant quarter
Skating Rink	Performance Square	Spa	Cycling Tracks	Business lounge	Floors finished with imported marble and wood	Guest Accommodation
Golf course	Recreation area	Steam Room	Fitness facilities (Yoga, aerial yoga, and Zumba)	Clubhouse	Designers Home (Like Armani)	
Indoor Golf Simulator	Pool Amphitheatre	Jacuzzi	24 hr emergency ambulance service	Themed garden		
	Mini theatre		Dispensary	Wi-Fi garden		
				Private Lawn		
				Terrace Garden		

EXHIBIT 5

Value	Meaning
1	Equal importance
3	Moderate importance
5	Strong importance
7	very strong importance
9	extreme importance
2,4,6,8	intermediate values
1/3,1/5,1/7,1/9	Values for inverse comparison

AHP questionnaire:

The respondents were asked to compare option A with option B and, using the scale from 1-9 (where 9 is extremely important and 1 is equally important),

highlight (with any color) the relative importance of option A (left column) to option B (right column).

Option A	Extremely		Very Strongly		Strongly		Moderately		Equally		Moderately		Strongly		Very Strongly		Extremely	Option B
Sports	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Recreational and entertainment
Sports	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Pool/Spa
Sports	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Health and wellness
Sports	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Hangout Space
Sports	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	State of art homes
Sports	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Guests and support staff amenities
Recreational and entertainment	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Pool/Spa
Recreational and entertainment	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Health and wellness
Recreational and entertainment	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Hangout Space
Recreational and entertainment	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	State of art homes
Recreational and entertainment	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Guests and support staff amenities
Pool/Spa	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Health and wellness
Pool/Spa	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Hangout Space
Pool/Spa	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	State of art homes
Pool/Spa	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Guests and support staff amenities
Health and wellness	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Hangout Space
Health and wellness	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	State of art homes
Health and wellness	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Guests and support staff amenities
Hangout Space	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	State of art homes
Hangout Space	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Guests and support staff amenities
State of art homes	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Guests and support staff amenities

EXHIBIT 6

Survey 2 - ranking of amenities questionnaire link

https://forms.gle/sqz5dnrwz4vHHydAA

EXHIBIT 7

Database link: Database_Survey_RFP.xlsx - Google Sheets

This link contains the details of 700 respondents to whom the connection request was sent on LinkedIn and the final respondents who filled the survey.

EXHIBIT 8

Personal note sent on LinkedIn while sending a connection request to prospective respondents.

> Dear Sir/Ma'am,
>
> I am……, a PGDM student studying at JAGSOM, Bengaluru. We are doing a project to understand the preferences on amenities for a luxury home. It would be really great if you could help us in filling the survey. This is purely for educational purposes.

EXHIBIT 9

AHP responses:

Survey 1 - AHP responses.xlsx - Google Sheets

Rank Order Method responses:

Survey 2 - Ranking responses - Google Sheets

Calculations:
https://docs.google.com/spreadsheets/d/17k6wUlLOHVToPN9bDxYniHzZaI7K0_7B/edit#gid=634604119

EXHIBIT 10

Table 1

	Sports	Recreational and entertainment	Pool/Spa	Health and wellness	Hangout Space	State of the art homes	Guests and support staff amenities
Sports	1.00	2.93	0.97	2.10	1.15	1.30	1.75
Recreational and entertainment	0.34	1.00	0.94	0.80	1.23	0.58	1.10
Pool/Spa	1.03	1.06	1.00	1.04	1.27	2.08	2.81
Health and wellness	0.48	1.24	0.96	1.00	2.77	2.95	2.74
Hangout Space	0.87	0.81	0.78	0.36	1.00	1.77	0.84
State of the art homes	0.77	1.71	0.48	0.34	0.65	1.00	1.02
Guests and support staff amenities	0.57	0.91	0.36	0.36	1.04	0.86	1.00

Table 2

	Sports	Recreational and entertainment	Pool/Spa	Health and wellness	Hangout Space	State of the art homes	Guests and support staff amenities
Sports	1.00	2.93	0.97	2.10	1.15	1.30	1.75
Recreational and entertainment	0.34	1.00	0.94	0.80	1.23	0.58	1.10
Pool/Spa	1.03	1.06	1.00	1.04	1.27	2.08	2.81
Health and wellness	0.48	1.24	0.96	1.00	2.77	2.95	2.74

Hangout Space	0.87	0.81	0.78	0.36	1.00	1.77	0.84
State of the art homes	0.77	1.71	0.48	0.34	0.65	1.00	1.02
Guests and support staff amenities	0.57	0.91	0.36	0.36	1.04	0.86	1.00
Sum	5.06	9.67	5.49	6.00	9.12	10.54	11.25

Table 3

	Sports	Recreational and entertainment	Pool/Spa	Health and wellness	Hangout Space	State of the art homes	Guests and support staff amenities	Sum	Critical Weight
Sports	0.20	0.30	0.18	0.35	0.13	0.12	0.16	1.43	0.20
Recreational and entertainment	0.07	0.10	0.17	0.13	0.14	0.06	0.10	0.76	0.11
Pool/Spa	0.20	0.11	0.18	0.17	0.14	0.20	0.25	1.26	0.18
Health and wellness	0.09	0.13	0.18	0.17	0.30	0.28	0.24	1.39	0.20
Hangout Space	0.17	0.08	0.14	0.06	0.11	0.17	0.07	0.81	0.12
State of the art homes	0.15	0.18	0.09	0.06	0.07	0.09	0.09	0.73	0.10
Guests and support staff amenities	0.11	0.09	0.06	0.06	0.11	0.08	0.09	0.62	0.09

Table 4

Critical weight of the amenity category	Amenities under the amenity category	Reversed ranking	The desirability value of the amenity
0.20	Sports		
	Indoor Games	5	1.02
	Squash court	4	0.82
	Golf Course	3	0.61
	Skating	2	0.41
	Indoor Golf simulator	1	0.20
0.11	Recreational and entertainment		
	Mini Theatre	6	0.66
	Pool Amphitheatre	5	0.55
	Amphitheatre	4	0.44
	Multi-Purpose Hall	3	0.33
	Performance Square	2	0.22
	Recreational Area	1	0.11
0.18	Pool/Spa		
	Private Pool	5	0.90
	Spa	4	0.72
	Steam Room	3	0.54
	Sauna	2	0.36
	Jacuzzi	1	0.18
0.20	Health And Wellness		
	World-class gym	6	1.19
	Fitness facilities	5	0.99
	Walking tracks on the terrace	4	0.80

	Cycling Track	**3**	**0.60**
	24 hr emergency service	**2**	**0.40**
	Dispensary	**1**	**0.20**
0.12	**Hangouts**		
	Café	**8**	**0.93**
	Terrace Garden	**7**	**0.81**
	Business Lounge	**6**	**0.69**
	Sky lounge	**5**	**0.58**
	Club House	**4**	**0.46**
	Private Lawn	**3**	**0.35**
	Themed Garden	**2**	**0.23**
	Wi-fi garden	**1**	**0.12**
0.10	**State of the art homes**		
	Fully air-conditioned	**4**	**0.42**
	Floor finished with imported marble and wood	**3**	**0.31**
	Home Automation	**2**	**0.21**
	Designer Home	**1**	**0.10**
0.09	**Guest and Staff Amenities**		
	Guest Accommodation	**3**	**0.26**
	Servant Quarters	**2**	**0.18**
	Provision of creche	**1**	**0.09**

AUTHORS

 **Sibiya Chinnadurai**	 **Sakshi Gupta**	 **Avolupatti Suneel Kumar**	 **Kotti Venkata Srikrishna**
This White paper was undertaken by Sibiya Chinnadurai, Sakshi Gupta, Avolupatti Suneel Kumar, and Kotti Venkata Srikrishna, the PGDM 2020-2022 batch, a requirement of the fulfilment of the Career Track Program in MarTech offered at Jagdish Sheth School of Management. Students received inputs from Dr. Sivagnanasundaram, Professor & Chairperson in the Marketing area, JAGSoM.			

JAGSoM

JAGDISH SHETH SCHOOL OF MANAGEMENT

AACSB ACCREDITED

BANGALORE CAMPUS
#8P & 9P, KIADB Industrial Area,
Electronics City 1st Phase, Bangalore 560 100, India
Mobile: +91 99000 67702 | Tel: +91 85302 69228
www.jagsom.com

GREATER MUMBAI CAMPUS
Vijaybhoomi University
Village: Jamrung, Post: Ambivali, Taluka: Karjat, Dist: Raigad,
Greater Mumbai 410201, India. Tel: +91 2148 - 240 600 / 700
www.vijaybhoomi.edu.in