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Sudhindra Bangalore Seetharam

Developing a Digital AI Roadmap for Retail

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This thesis focuses on deriving key business priorities for small and medium-sized retail organizations by formulating a digital AI roadmap that can serve as a starting point to apply AI in their business to stay abreast with the competition. The study focuses on analyzing a group of retailers that still have more than 90% of the sales through traditional brick and mortar stores. As the transformation of the retail industry to digital progresses, the study aimed to help these retail organizations to adopt early.

The study was performed using an Applied action research and using qualitative research methods via interactions with key business stakeholders, service consultants in IT, and principal consultants of global IT service companies. The current state analysis indicated what technologies the selected retail organizations use, and discussed how they meet the objective of using technology enablers.

In the theoretical formwork, the study looked into the digital transformation performed by big leaders such as Amazon, Alibaba that are leading the way in adopting digital and AI. By exploring the theoretical sources and best practice, the study concludes that AI today is more of a promise and hence organizations need to prioritize based on their business needs. Early adoption will help in evolving the business strategy in demanding times. When an organization need to improve its process, a proven six sigma methodology can be applied. Similarly, when there has been newer technologies or challenges in a domain, relying on a team to delve into the situation and find different ways to overcome has proven bringing good results.

As the outcome, the study recommends initiating a “value generation team” as there is a wide variety of newer technologies to be explored and utilized. The study also fills the current gaps of business use cases. With a combination of different use cases along with industry best practices, the outcome of this thesis proposes a digital AI roadmap that can help organizations to apply AI. Use case prioritization models can be adopted by any organization to achieve business results.

Keywords	Digital AI, Retail, Roadmap. Value generation, Business Strategy, Digital maturity, Strategy alignment

Preface

I chose to work with this thesis topic as I was looking to get to the details of AI as an emerging culture in growth companies and eagerly was looking forward to collaborating with retail organizations.

The retail industry will transform. It was my ambition to do something very productive. After being in IT and ITES industry for nearly 18 years this was the time and desire to put my competencies and capabilities in good use but also to challenge the statuesque, especially with the small and medium-sized retail enterprises. I had already seen how other industry domains, for example, airlines were adapting to the new business world by managing our IT Services to them for nearly 8 years. It was for me to take up something that can challenge and build high responsibility to manage different sub-areas under a vertical and correlate the diversity in their proceeding for a common goal.

In my role as an Account Manager, I had to think out of the box in many instances to create a mutually viable and a successful story with my clients. I felt the retail organization in Finland are laggards. There is an oligopoly in the market with some big names capturing the market share completely. There was a need to think laterally here to provide a clear path for an organization not willing to take a lead and also not wanting to be followers. But overall, I was personally willing to see if I can find an opportunity to be able to bring value to the organization in creating a business strategy or transforming the organization to be abreast with newer ways of working and to beat the competition in the new business models. I found that this will provide me with an opportunity to strike a conversation with companies and while I can empathise their situation, also I could provide my recommendation based on a structured approach that I have learnt in the Business Research and Modelling course at Metropolia University of Applied Sciences.

Sudhindra Bangalore Seetharam
Helsinki
2 June 2020

Acknowledgments

I would first like to thank my thesis advisor Raisa Vastra of Business School of the Metropolia University of Applied Sciences. Coincidentally I had met her during the admission test and preliminary interview. She has been an honoured friend since then encouraging and always motivational. When I decided my thesis topic, there were some resistance to accept this as a master's thesis level simply due to challenges and dependencies that it has with the business. But Raisa has always been my support and consistently been providing ideas to move ahead when hurdles came in. She gave me leads to reach out to organizations and shared personal retail shopping experiences in the far west that will transform whole industry and helped me address the business challenge broadly.

Indeed, this would not have been possible without the expert discussion with the participating retail organizations in the study. The contagious enthusiasm in their approach to address business problems is undoubtedly a learning and main cause of this successful study.

A special mention goes to Zinaida Grabovskaia as a second reader of this thesis, and I am grateful to her for her invaluable comments. I had opportunities to be her pupil in the innovations and project management category and she always emphasized the importance of reviewing the document from the reader's perspective and has been my constant support.

I would also like to acknowledge Dr. James Collins as my Business Research and Methods course advisor making sure that I understand the concepts thoroughly by laying special emphasis on academic writing.

It would not be complete without my eternal support from my late mom, who taught me to be humble and determined with whatever I do. She left to an eternal abode just before I started this course leaving us in a state of void. But the sheer thoughts and life lessons that she has passed it on just kept me going. Thank you!

I would like to express my gratitude to my wife Arti Sudhindra for instigating my mind to go back to school and standing by me like a rock at the time of family bereavement, continuously encouraging me to take up the studies, research and thesis writing throughout my school term by being a cushion and giving her full time to our little kids. Special thanks to my children for schooling me and encouraging me to be a good student.

I take this opportunity to also express gratitude to all the other faculty members and fellow students at Metropolia for their lessons and support. I also place on record, my sense of gratitude to one and all, who directly or indirectly, have lent their hand in this venture.

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List of Abbreviations

AI	Artificial Intelligence
C	Client (Retail)
CEO	Chief Executive Officer
CF	Conceptual Framework
CFO	Chief Financial Officer
CM	Customer Management
CRM	Customer Relationship Management
CSA	Current State Analysis
E	Employee from the case company
E.g.	Example
E-Com	eCommerce
et al.	et alia
etc.	et cetera
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
HBR	Harvard Business Review
HR	Human Resources
IBM	International Business Machines Corporation
ISV	Independent Software Vendors
IT	Information Technology
ITES	Information Technology enabled services
KPI	Key Performance Indicators
ML	Machine Learning
N	No
NLP	Natural Language Processing
PoC	Proof of Concept
Q3, Q4	Quarter 3 and Quarter 4 of a calendar year
R&D	Research and Development
RILA	The Retail Industry Leaders Association
RPA	Robotic Process Automation
SME	Subject Matter Expert
SP	Service Provider
SWOT	Strength, Weakness, Opportunities and Threat
TV	Television

UN	United Nations
USD	United Sates Dollar
VA	Virtual Assistant
VP	Vice President
Y	Yes

1 Introduction

Post the industry revolution 3.0, i.e. the advent of computers, there have been many new topics discovered or rediscovered. Even before the term Artificial Intelligence was introduced by John McCarthy at a conference in 1956, the journey to understand the so-called human machines had begun years before that. Alan Turing had published a paper "Computer Machinery and Intelligence" in 1950 that is currently considered as the emergence of this new technology. Since then, Artificial intelligence has been adopted by many. Presently, noninvasive surgery is using computer robots, as well as autonomous cars in the Automotive industry and language interpretation in various areas.

In retail, all IT service organizations have recognized that it is an incredibly challenging industry, which accounts for 50% of GDP in most countries. Narrow net margins mean that even small efficiency improvements can translate into big net income results. The volume of data in retail, especially high-frequency retail, is exceptionally large. Furthermore, an extremely competitive environment driven by companies like Amazon and Walmart makes it even tougher for mid-market retailers to survive.

According to a new research report by Global Market Insights (2017), penetration of AI technologies in the retail market will exceed 8 billion USD by 2024. With overwhelming results of utilizing Machine Learning to leverage tangential benefits in an organization, AI, Machine Learning, neural networks have become new buzz words and there is a massive surge in related start-ups. In Finland only, according to the observations of the author, there are currently 400+ companies offering specialized AI services and this number will only grow.

Andrew Ng (2019), Chairman and CEO of Landing AI, termed AI to be "the new electricity." AI will become vital for all of us in future. The world is already seeing the implications of AI positively. The winner will emerge to provide the platform for consumers use that will be too hard to live without. While several organizations are gearing up with the trend, it is important to have strong leadership with the business organization to define how to handle it.

This study sets to explore various opportunities AI can bring to Retail organization and how an organization can embrace this as part of their growth strategy by defining a digital AI roadmap.

1.1 Business Context

Retail is a big market. A retail industry unit can be fundamentally broken down into the following sub-categories:

- Product acquisition and Assortment
- Sales and Customer Services
- Corporate Finance including payments and payment services
- Legal and other common functions. (Research and Development, Communications, Marketing, Advertisements, and communications)
- Retail shop and Store Operations
- Logistics and Delivery.

According to the Deloitte Retail trends report (2018), it is a transformative time for retail. During recent years, commerce growth has forced them to rethink on their sales strategy and most small and medium-sized retail segments have embarked on to online sales far more aggressively than ever. Retail can be classified into different industry segments. The following table provides the main industry segments.

Table 1. Different Categories of Retail (summarized by the author).

No	Retail Segments	Description
1	Departmental Store	Offering a wide variety of items.
2	Grocery Stores	Selling daily commodities for human consumption
3	Apparels	Wide variety of fashion, clothing, and dress materials
4	Electronics and consumer stores	Selling electronic goods like refrigerators, TV, Washing machine and so on
5	Convenience shop	A corner store selling an assortment of daily needs. Prices usually slightly higher with limited stock
6	Super Markets	Usually big stores with a comprehensive range of products
7	Malls	A shopping center hosting a variety of retail shops

According to a report published by Accenture and Salesforce (Retail organizations: The Next Stage of Transformation, 2017), retailers are put in a parody. They are put into a position to think about their customer-centric strategy. The pace at which technology has

revolutionized is extraordinary and to stay competitive, relevant and to look forward to a growth in the business profitably, organizations are required to differentiate themselves.

With handheld devices and easily accessible internet, consumer behaviour towards shopping has changed. According to another research published by Juniper Research (2019), retailers are investing in AI and believed to invest in AI up to about $7.3 billion on Artificial intelligence in two years, which is about 350% more than the amount spent in 2018. According to Adair (2019), Artificial intelligence has become a knack to the retail companies in remaining viable in the market today and the majority of them are investing in it in the long term. It is because AI provides ample opportunities to attract consumers to the brick and mortar store too when online shopping had once disrupted the shopping behaviour. It is no more a phase of experimenting. There are quite many proven success stories today that have produced great return on AI investments. AI also has given rise to another opportunity for consumers demanding a customized shopping experience. Retail organizations need to stay innovative and incorporate retail experience along with customer experience and AI can unleash this possibility.

1.2 Business challenge, Objective and Outcome

Retail companies invested to create online commerce years ago. Sales in digital channels did increase but according to a study conducted by Euromonitor International (2018), about 83% of the purchases done worldwide will be from the physical stores. What sets them apart is the advent of newer technologies.

AI will compel the organizations to think beyond customer experience and provide consumers with retail experience. Thus, while AI is bridging the gap between the online sales channel and offline store sales, it is evident that AI is in the lead to transform the retail organization beyond imaginations. Retail companies would like to have good AI solutions that will entice prospects to not see the turning pieces of the machine but believe in having a personal, natural, real interaction with a brand so that, the brick and mortar stores are heading back to business. Organizations are grappling with significant strategic decisions mainly, determining where to invest in AI innovation based on application opportunity and competitive intelligence.

However, it is already clear that no digital AI road map will be like a 'one size fit all'. It will also depend on the organization's digital maturity. Hence, organizations need to explore possibilities with AI and determine a firm's AI strategy for getting there.

In this Thesis, the participating Organizations are retail companies having business operations in Finland that are looking to differentiate from the competition by applying effective use of AI. The case company that the author belonged to at the time of initiating this study is a global IT service providing company that was looking to ramp up its service offering to the retail industry by offering niche AI solutions and was looking to have a go-to-market strategy in digital AI solutions, especially for the Nordic market. When these two with similar interest and intentions met, it was meant to be for a purpose. According to an article published by McKinsey & Company (2019), implementing AI will need meticulous execution to avoid a nonessential loss that could be significant in the form of company's reputation, or impact on staff, individuals, and the community at large. An organization having a proper digital AI strategy would bring a positive impact to its business. This study sets out to explore this topic and provides recommendations as to the final output.

Accordingly, the objective of this thesis is *to develop an AI roadmap for retail that will in practice mean a scalable AI strategy roadmap for small and mid-sized retail companies*.

Thus, the projected outcome of this study is *a digital AI roadmap* that will hopefully serve as a baseline for similar organizations willing to adopt AI as part of their business strategy.

The AI roadmap should help the participating organizations to adopt AI as per the maturity ladder and effectively apply AI solutions using business use cases and scale it across the enterprise.

1.3 Participating Organizations

To achieve this objective, a list of Nordics based top retail companies was first compiled. The list was based on the study reported by Colliers International Finland (2018). This list was important because although there were a couple of organizations willing to conduct an exercise and adopt AI, the objective of this study was not meant to be a point

solution. So, with more organizations willing to participate in this study, better data could be collected to support the thesis.

The following Figure 1 provides Scandinavian brands that dominate the Finnish Retail segments.

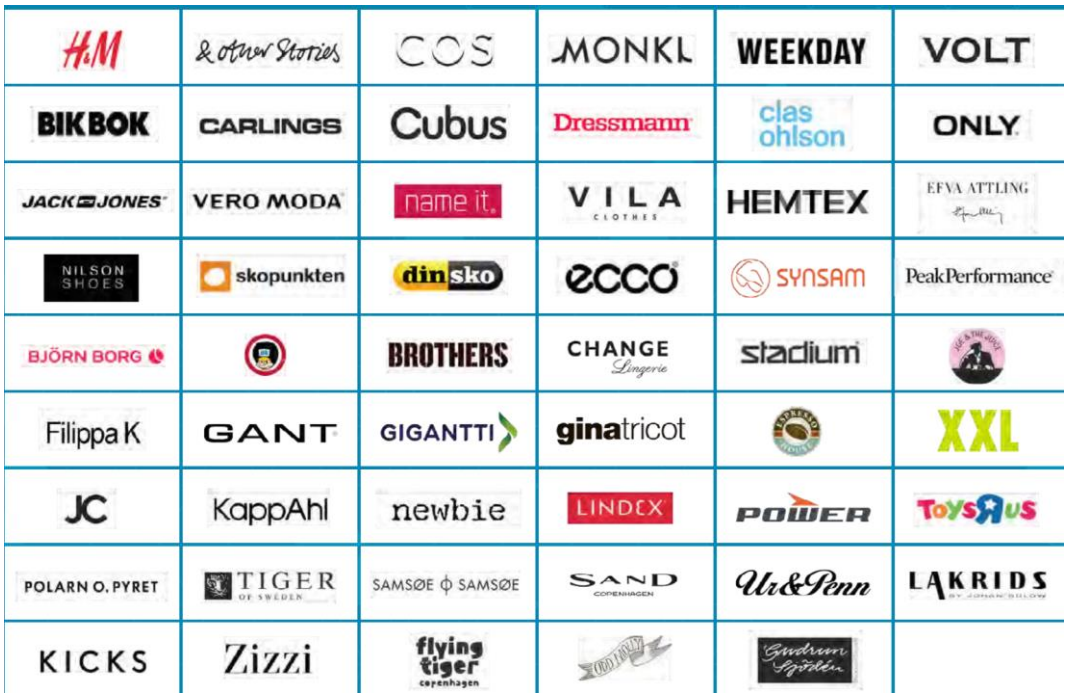


Figure 1. Scandinavian brands that dominate in Finnish retail segment (Colliers International Finland 2018).

In the recent past, international brands have entered the Finnish market. The following Figure 2 provides brand entry into the market against a timescale.

2014	2015	2016	2017	2018
XXL	Michael Kors	Volt	& Other Stories	JD Sports
Marks & Spencer	Odd Molly	The Athlete's Foot	Samsoe & Samsoe	Suitsupply
COS	Victoria's Secret	Levi's	Newbie	Weekday
Hugo Boss	Pandora	Massimo Dutti	Lexington	Cinamon
Quiksilver	Espresso House	Flormar	Lakrids	
Thomas Sabo		Peak Performance	Taco Bell	
Nespresso		WHSmith	Beijing8	
O'Learys		Power		
Burger King		Joe & The Juice		
		UpperCrust		

Figure 2. International brand entrants in Finland from 2014 (Colliers International Finland 2018).

The list of identified companies that were contacted through the email address is shown in Table 2. The response was more active from small and medium-sized outlets that intended to disrupt by adopting AI and related technologies in size, scale, and speed. Table 2 provides a list of retail organizations that were used as touchpoints.

Table 2. List of Retail companies used as touchpoints for the thesis.

No	Retail company	Industry Sub-Segment
1	Privately held family-owned clothing merchant	Fashion and Accessories
2	Retail chain selling household goods	Speciality
3	Home improvement firm	Speciality
4	Sporting goods Retailer	Fashion and Accessories
5	Finnish departmental retailer	Fashion and Accessories
6	New Entrant – Vantaa, Challenger in Oriental, and Asia commodities	Grocery
7	Finnish online retailer	Grocery
8	Oldest Afro-Asia Market, Helsinki, and Vantaa	Grocery
9	The biggest trading sector in Finland	Speciality
10	Challenger and a Discount Store in Finland	Speciality

This thesis is based on the findings from these interested retailers on their expectations and commitment, enriched with industry best practices that provide digital AI adoption examples with some relevant and “low-hanging-fruit” type business cases.

1.4 Thesis Outline

The Thesis is written in seven sections. Section 1 is the Introduction. Section 2 describes the method and material used in this study. Section 3 is the current state analysis of the state of AI penetration and strategies used by the small and mid-sized retail companies in Finland, as well as expectations and commitment to introducing AI. Section 4 contains the literature review and discussion about best practice in AI in retail. Section 5 contains the proposal of the AI roadmap for the small and mid-sized retail companies in Finland. Section 6 is the validation of the proposal with the business experts and the final proposal after their amendments. Finally, Section 7 contains a summary of the findings and conclusions from the study.

2 Method and Material

This section describes the research approach, research design, and data collection and analysis methods used in the Thesis.

2.1 Research Approach

According to Harindran and Chandra (2017: cha 1.3 para 1), the research comprises "creative work undertaken on a systematic basis to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications".

There are distinct types of research strategies. Stringer (2013) describes Action research as a systematic approach that helps in the investigation process to find operative solutions to the problem. Kurt Lewin is considered to be the founding father as he was the first to develop the theory of Action Research. According to Lewin (as quoted by Coghlan and Brannick, 2014), this process involves three main sets of activities. They are Planning, Action and Fact-finding. Kemmis and McTaggart (1999) explain Action research as a cyclic process with a set of different activities and illustrated in Figure 3 below.

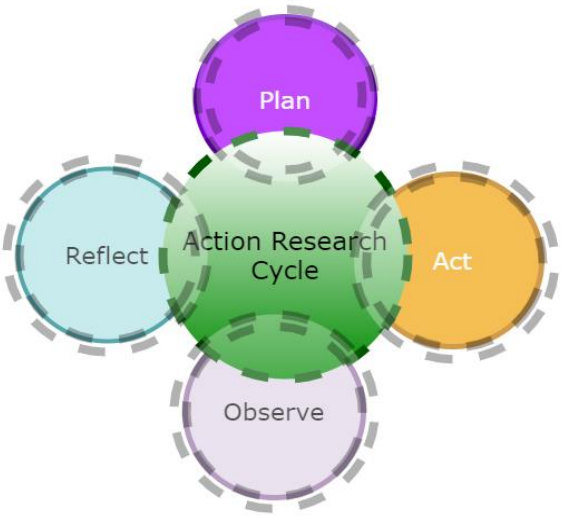


Figure 3. Illustration of cyclic process activities involved in the Action Research cycle (based on Kemmis and McTaggart 1999).

This thesis follows the applied research method, which means the application of theory into practice to address a specific business situation, conducted to solve a real problem. This study is also mainly based on qualitative research methods. Data collection for the study purpose is done by conducting interviews with organization stakeholders, captivating opinions from industry experts, referring to existing literature, using principal consultants as a secondary source of information on initiatives adapted in similar organizations elsewhere to bout with the trends. The study also analyzed survey data available for loyalty members from one of the participating organizations, a general observation also as an end customer and an independent survey with IT professionals responsible in a similar capacity in different organization verticals.

The thesis further has adopted the Applied action research approach (Kananen 2013). The key idea here is that the study uses a scientific approach with an empirical method to find the best-fit solution for organizational issues by working in collaboration with those who experience these issues and generates new knowledge. Action research has many origins and roots. The thesis is presented in a linear format here, but readers should look at it as a spiral set of activities as participants have worked and explored details by constantly reviewing based on the reflection of actions at each stage of the assessment process.

To summarize, this study uses applied research method by conducting Applied action research along mainly with qualitative methods with some elements of quantitative analysis. The thesis is oriented to find an empirical solution to a business problem.

2.2 Research Design

To achieve the objective of this thesis the following steps were applied. The first step was to clarify the definition of the problem. It was done by evaluating the business problem along with the key set of activities required for achieving the desired output.

Second, a deep dive analysis was done to understand the current state and intended future state of the digital AI maturity in the participating organizations and listing down the gaps or improvement areas together with existing best practices. Current state analysis was done by assessing the existing materials available from the participating companies, by conducting interviews with key stakeholders, workshops in a few cases to understand the priorities both as a top-down and a bottom-up approach.

Third, a literature review was done to ensure that the study takes into account any AI future trends, shortcomings in similar exercises done earlier but mainly to adopt the industry-wide best practices while addressing similar business problems.

Figure 4 provides a research design for the study.

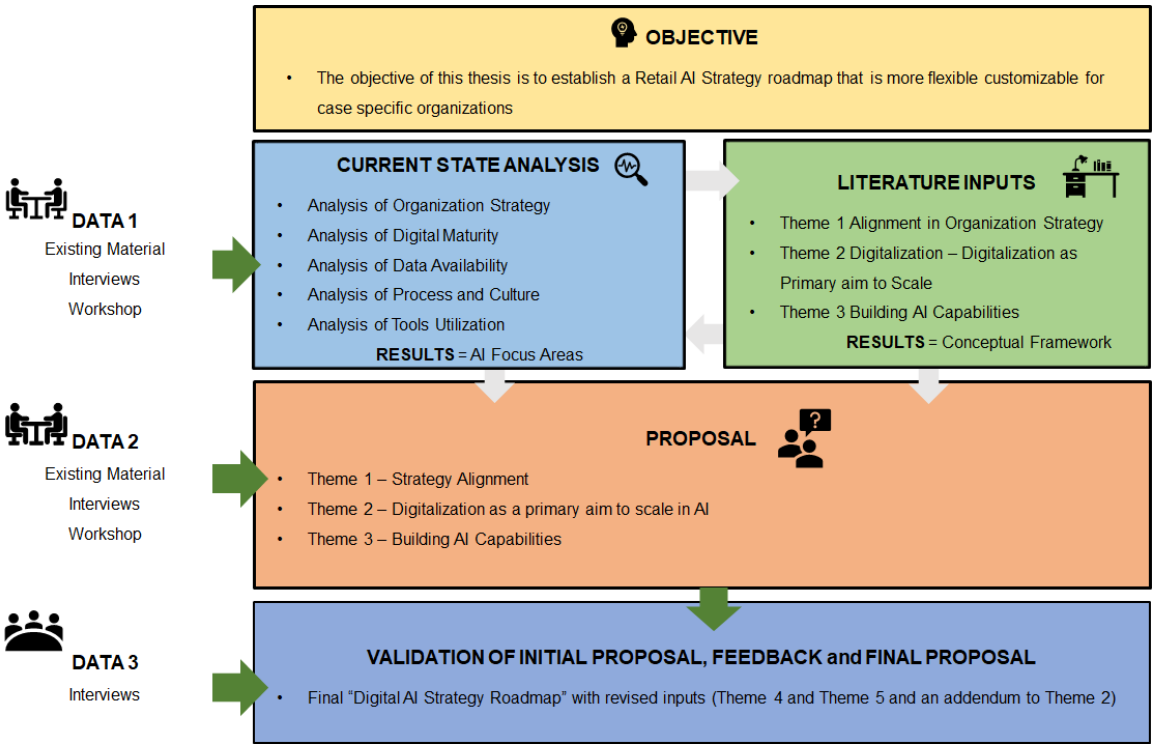


Figure 4. The research design of this thesis.

As shown in Figure 4, upon conducting the current state analysis, reviewing the literature, and existing knowledge, a conceptual framework is formulated that serves as a guide for building the proposal. The conceptual framework helps to ensure the viability, applicability of the initial proposal.

Upon building the initial proposal, it is validated with suitable key stakeholders, leading to the final proposal based on feedback.

2.3 Data Collection and Analysis Methods

This study has drawn data from a variety of data sources. The data was collected in three data collection rounds. Table 3 below shows the details of the Data collections 1-3 used in this study.

Table 3. Details of Data collections 1-3 used in this study.

	Data sources	Data type	Date and duration, documented as	Stakeholders:			
				C	ISV	SP	E
Data 1, Current state analysis							
1	Key systems landscape, Digital applications, and products available To Be state, Missed opportunities, Business challenges, Current pain points.	Interviews and discussions with Head - Key commercial and IT stakeholders (Telcon/Face-to-face)	2018 and early 2019 30 to 90 min Fieldnotes	Y	Y	Y	N
2	Data availability, processes, and competencies. Data and digital maturity (E.g. Customer Analytics)	Interviews and discussions with SME, Data Scientist, AI/Deep Learning Experts (Interview/chat/ Telecon)	Hand in hand with step 1 60 to 90 min (Face to face and Remote meeting). Fieldnotes	Y	Y	Y	N
Data 2, Proposal Building							
4	Digital Workflow Team	Workshop with SME, IT and/or business representative or Employee	Upon completion of the current state analysis phase 2 half days face to face and remote. Fieldnotes	Y	N	N	Y
5	Product, Customer Service, Pricing, Personnel Teams	Workshop with SME or Associate	Upon completion of the current state analysis phase 2 half days face to face and remote. Fieldnotes	Y	N	N	Y
Data 3, Validation							
6	Feedback from Initial Proposal Documentation	Validation discussion with Executive sponsor, Key stakeholders	Upon submission of the initial proposal' 90 min. Presentation and discussion Fieldnotes	Y	N	N	Y
C – Retail client/customer; ISV – independent software vendors; SP – Service provider; E – Employee from the case organization; Y – Yes, N - No							

As seen from Table 3, data for the Thesis was collected in three rounds. The first round, collecting Data 1, was conducted for the current state analysis. This data included Preliminary study materials such as Annual Report, Organization handbook on digital priorities from 3 participating organizations, process document from case company, case studies, field notes from interviews.

In the second round, Data 2 was collected to gather suggestions from the participating companies and the case company for developing the proposal. This data included mainly the field notes documented during the interviews and workshop.

In the third round, Data 3 was collected when validating the Initial proposal. Data 3 included feedback for the proposal from the key stakeholders from the participating organizations and recommendations from experts from the case company.

Table 4 provides an overview of different meetings and workshops that were carried out as part of the study.

Table 4. Reference to the meetings and workshops conducted in the study.

Area	Sub-Area	Total Meetings/ Workshops
Strategy and Management	• Retail Strategy. Innovations and Strategy, Promotional planning, product replenishment, Demand Management	• 8 Meetings • 1 Workshop
Sales, Product Assortment and Management	• Sales and Marketing, e-business, CRM	• 4 Meetings • 1 Workshop
Operations and Customer Services	• Complaint management • Contact Center	• 6 meetings • 1 Workshop
Supply Chain	• Supplier to Customer Retail Handling	• 4 meetings • 1 Workshop
IT[1] and Common Functions	• Infra, Architecture, HR, Corporate Responsibility, Procurement, Communications, Audit.	• 8 meetings • 1 Workshop

[1] Role Type required for IT was Executive, Source System SME and Development Managers

Data 1 collection

As a part of Data 1 collection interviews and meetings with different stakeholders as indicated in the tables above was carried out. SME interviews helped in understanding the current system, process, loopholes, ambitions, opportunities, development areas. With Business functions, the same exercise was conducted to collect detailed levels of data pertaining to that unit translating from their overall strategy. In addition, as part of the pre-study companies that helped with documentation and publicly available reports including annual report were assessed to understand the health of the organization, vision, mission and main objectives for the future.

All participating organizations preferred to stay anonymous and do this in a semi-structured way due to their own priorities. No meetings or calls were recorded. Meetings were conducted sometimes post-office hours due to customer's preference. 30% of the overall conducted meetings were based on face to face interaction and the rest was conducted remotely. All interactions that were done as part of assessing the market trends that included touchpoints outside participating retailers were based on remote work.

As this involved group of participating organizations, the outcome of such exercise is an appropriate comparison with the peer group.

It is important to note that the approach here focused to analyze information on precise spots and micro qualities in the business units current state and attractive opportunities.

During the process of the study, the author had mainly Strategic Accounts and Business Development responsibility in a global IT organization referred in this thesis as a case company. Hence, there was pertinent data collected from secondary sources, viz., colleagues performing similar exercises to understand other markets, team working together to define the case company's Go to Market Strategy for retail in the digital area.

A kick-off meeting to set the desired expectations and level of involvement from different stakeholders for the exercise was done with 3 of the participating companies. The rest responded to the requirement as and when required with some chasing up and lag time.

Internal documents used in the current state analysis as part of Data 1 is provided in the following table.

Table 5. Internal documents referred as part of pre-study for Data 1 collection.

	Name of the document	Pages/other content	Description
A	Case company's Digital Transformation Handbook.doc	43 pages	IT Transformation process and principles to move from rigid heavy system-dependent architecture to flexible, resilient, secure but easily scalable architecture
B	Case studies and success stories in case company	Presentation	Case studies on AI with Google, Microsoft, and IBM technologies
C	3 participating companies digital priorities documents	Presentation documents 46 slides in total	Their adaptation unlocks digital value in their business
D	Annual Reports, Media reports and recent Customers feedback report (from 1 participating company)	Various	Organizations performance evaluation, net promoter score assessment.
E	Company Websites	Various	
F	Google Drive	Single Account	For accessing and sharing approved documentation.

As seen in Table 5, this study also analyzed a number of internal documents. The main documents included the digital transformation handbook that had references and best practices accessible on a desktop, participating company websites and annual reports received during the initial discussion with the organizations, digital priority document shared for reference from three of the participating organizations. The documents were analyzed for Data collection 1 round, the current state analysis, to get the participating organization's current digital maturity, its annual performance against its target, appetite to consider innovation and new development areas to assess the existing situation with the organization.

Data 2 collection

As a part of Data 2 collection workshops were conducted based on the collected input from Data 1 with different stakeholders as indicated in Table 3 above. After assessing the current state and noting down the future state criteria, it was important to fill the gap and the meetings were semi-structured with some preliminary questions mainly used to dig deeper to understand the actual expectations from the proposal. It was also to understand the priority elements. In addition to this, the consultation was done internally

with consultants from the case company to look at similar proposal requirements and apply best practices.

Data 3 collection

Data 3 collection was important to finalize the proposal. This was collected as feedback from the leadership team and accountable stakeholders in the participating retail organizations post the walkthrough of the initial proposal. It was done as a face to face meeting and was held for 90 min including presentation and evaluation of the proposal. The initial proposal was first shared to the participating organizations at least 3 days in advance so that the respondents can browse through the proposal for questions and clarifications to make the meeting effective. With the recommendations that came in as part of this data 3 collection round, the final proposal was formulated taking into account additional factors.

The summary of key activities for data 1-3 collection is described in Figure 5 below.

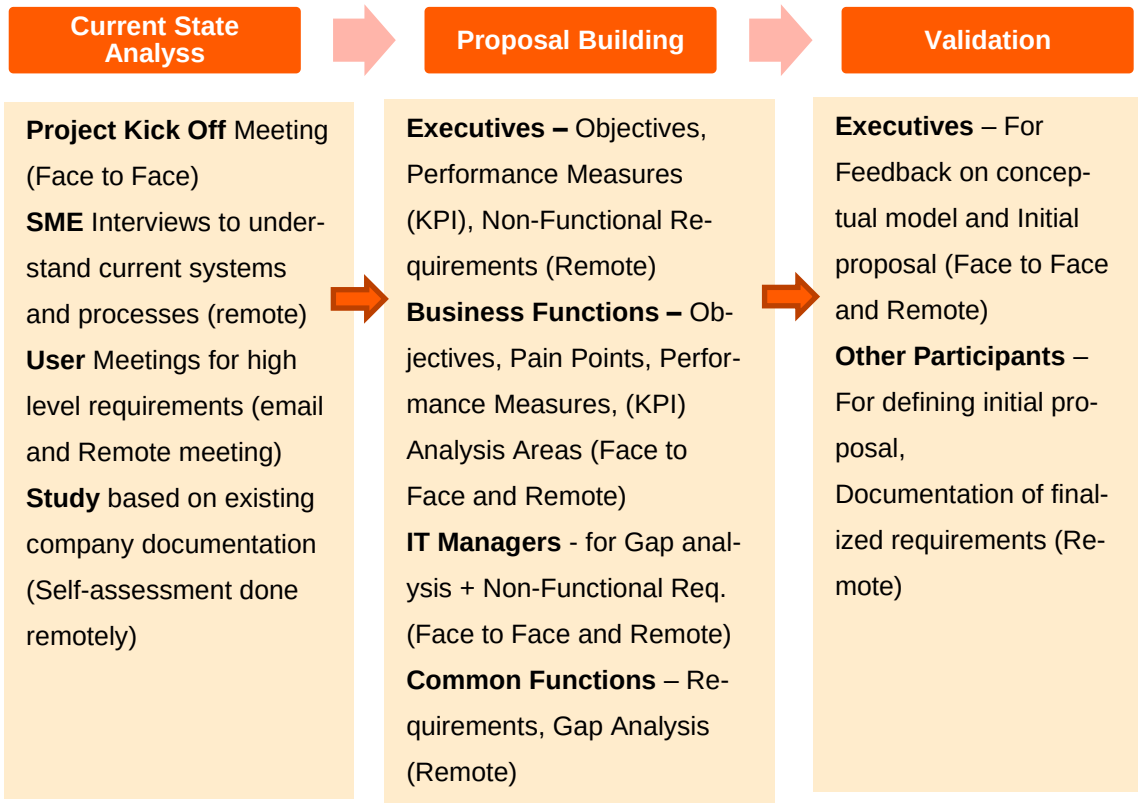


Figure 5. Summary of key activities for data collection, Data 1-3.

The initial set of documentation helped to get an overview of participating companies. But the biggest part of data that helped to assess the current state (Data 1) were the business interviews that highlighted many pain points and also gave rise to opportunities. Secondary data was used to co-relate and bring in best practices to visualize the To-Be State.

In summary, in this study, the interviews made the primary method of data collection. The interviews were conducted as semi-structured, face-to-face, and remote interviews with some set of preliminary questions created in advance. The interviews were moderated, and the field notes were taken. The questions that were used during the Data 1-3 collection round interviews can be found in Appendix 7-10.

2.4 Research Quality Criteria for This Thesis

The study selected 2 main criteria to evaluate the quality of the thesis as there were 2 elements. 1) Having a good sample for the study so the result can be transferable to some extent and 2) assisting the participating organizations in realizing the expected outcome of this study.

It was important to first define the evaluation criteria. Based on the business problem and the research method the following criteria ware considered: validity and reliability (explained as credibility, dependability, and Transferability)

A. Validity

Validity is a significant element to successful research. If a portion of investigation in a study is unacceptable then the entire study becomes valueless. Validity is hence an obligation and equally important for quantitative and qualitative research, Cohen et al. (2007: 179). According to them, there is always a risk to validity in a qualitative based study but the researcher should uncover the element of considering other people's viewpoint equally valid as our individuals but should minimize the risk as much as possible since data procured through qualitative analysis includes opinions of the participants with their attitude and standpoints that already collectively pay way to an amount of prejudice.

Hence, any trends or developments in emerging technology should have a suitable sequence and the latest for the study. Another vital dimension to safeguard adequacy of

the study is to ensure that respondents during the data collection are not pressurized or influenced to choose a specific answer to derive the outcome.

In this study, validity is planned to be ensured by taking the following steps. First, by referring to recent trends and assessments done in this field by using credible sources. Focus is on Professional bodies and Associations or Consultancy organization like Accenture, Deloitte, McKinsey, or similar business organizations. Second, to provide enough comfort to the respondents during the data collection round by having questions only as pointers and to invoke engaging discussions so that there is opportunity to delve deeper and note down data based on factual evidence.

B. Reliability

It concerns about the internal study situation. Factors affecting the researcher or participants, and the tools for data collection themselves. Lincoln and Guba (1985) as quoted by Cohen et al. (2007: 201) favour to swap reliability with conditions like credibility, dependability, and transferability. In other words, as explained by Bogdan and Biklen, (1992: 48) it is about researchers grade of correctness and completeness of reporting. So, this is accounted by including credibility, dependability, and transferability in the subsections below:

- *Credibility*

According to Lincoln and Guba (1985), credibility means a level at which the study signifies the real senses of the study respondents or the “truth value”. In this study, the following evaluation criteria are considered: (1) Adopting a specific research method so that the study is well established, (2) Use proven interview techniques with iteration, reiteration, and triangulation, (3) Consistent interview and data collection process, (4) Investigation of similar research study and its findings, (5) Summary and Final evaluation of the thesis.

- *Dependability*

Measured based on different techniques and methodology applied for the intended output vs actual output. In this study, the following evaluation criteria are considered: (1)

Adopting to well-established Research methods, (2) Research reviews, (3) Well-structured data collection plan.

- *Transferability*

The study was intended to address retail organizations in general. It requires an ability to generalize the study to an extent. Hence, choosing the list of organizations during the data collection should include a mix of all retail domain sub-areas and not chosen arbitrarily but from high-quality sources. Accordingly, a sense of external validity to have right sampling so that outcome can be useful to another similar enterprise as per the result of this work is a pre-requisite. In this study, the following evaluation criteria are considered: (1) Choose the list of participating organizations having relevance today and referred by reliable sources than making self-judgements. Include a mix of the retail organizations so that study is not focused on only one domain area; (2) Use a variety of participants to be able to get data at all levels.

The findings from the current state analysis are discussed in Section 3 below.

3 Current State Analysis of AI Penetration, Commitment to Introducing AI, and Strategies Used by Participating Retail Companies

This section discusses the current state of AI penetration, commitment to introducing AI and the strategies used by participating retail organizations. It was analyzed across wide parameters such as, organizations digital maturity, what part of the business is driven by consumer behaviour, key challenges in the recent past, pain points in process and tools, and their ambitions towards AI.

3.1 Overview of the Current State Analysis

The current state was analyzed through different perspectives. The current state analysis starts with *"What are we doing and Why?"* question. Once, this was identified, each of the parameters was looked at deeper by asking further questions. For example: Main objective, impacts what, at which level, processes followed, tools used, data and its authenticity, gaps in the existing process, ´to-be' state from the business viewpoint.

The analysis was seeking to find answers to the following fundamental questions:

First, capture the "to-be" state in the business capabilities gathered through discussions with the business team.

Second, highlight key gaps in the current state capabilities and seek potential opportunities to apply AI.

Third, based on industry best practice, delve deeper into identified opportunities by suggesting key recommendations to enable 'to-be' vision and note down the list of priorities to derive high-level use cases for new digital AI-enabled platforms.

The study adopted a bottom-up approach because the study was intended to bring a drastic change in the organization and requires not just thinking but managing and implementing it. The bottom-up approach exploits different ways of administration to accomplish organizations key objectives. Some of the noticeable impacts can be: (1) Creating an exclusive insight into the organization, its focus areas, and its workforces; (2) Gauging active threat involved in newer initiatives keeping in account the operational aspects of the organizations; (3) Shifting resources and policymaking control to a wider

part of the organization allowing to think broader to the cause; (4) Open-handed approach allowing employees enabling key initiatives in the organization to voice their opinion.

To structure the interview discussion and look for output systematically and consistently current state of the organization was analyzed based on five different perspectives, discussed in detail below:

1. Organization's Strategy and Objectives
2. Digitalization as a primary aim to scale AI
3. Data Availability
4. Processes followed, Organization culture and adaptation to a newer way of working
5. Tools and its current utilization.

3.2 Analysis of Strategy and Objectives

The first and fundamental question during this discovery phase was *What do you do and why do you do that?* This question was followed by *What is the overall objective that the organization aims at?*

The questions were involved to examine the organization's strategic objectives and to check how those were aligned with tactical objectives in the business score and to what extent they were aligned to the roles. Figure 6 provides a rationale for conducting the strategy and objectives analysis.

Figure 6 shows an adaptation of the existing theoretical approaches for the needs of conducting the current state analysis of strategies and objectives. There exist several performance management theories. Lynch and Cross (1991) as quoted by McNair and Watts (2010) are accredited to developing a balanced scorecard. Later on, in the subsequent year, Kaplan and Norton (1992) introduced a new adaptation of Balanced Scorecard linking 4 main measurement areas in the organization. Both these are focused on top-down approaches.

Figure 6 has categorized the performance management pyramid into 3 layers, given that there were 3 layers of interaction with the participating organization.

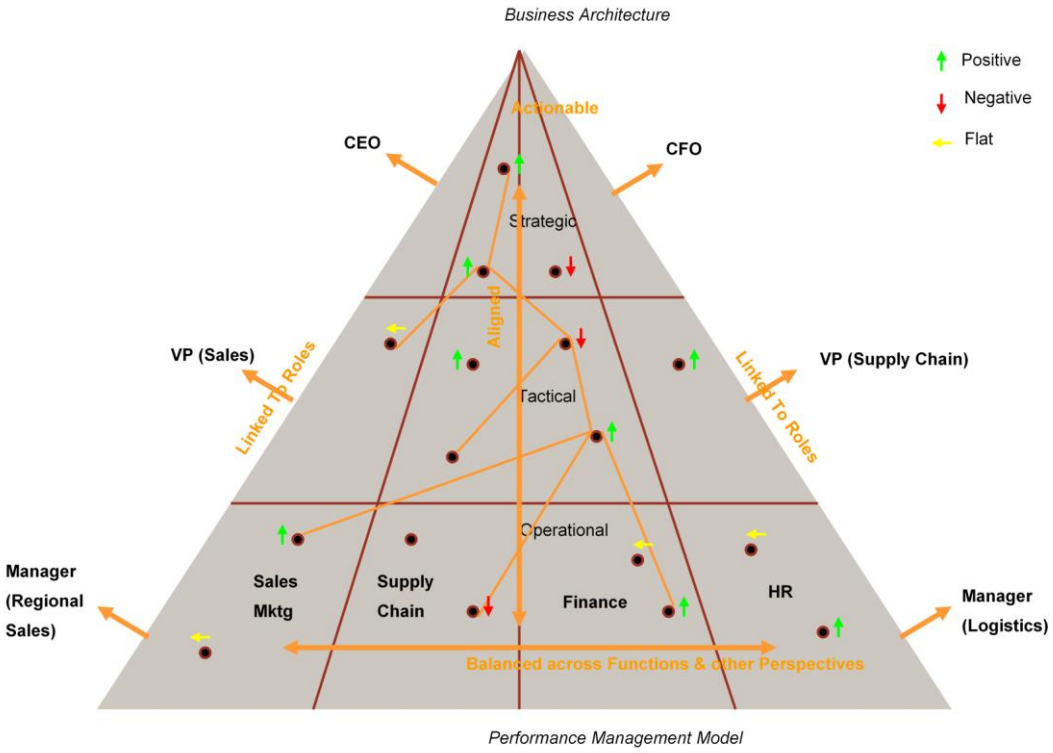


Figure 6. Summary of the identified key aspects of effective performance management in an organization.

In Figure 6, top of the pyramid is represented with the Strategic Objectives of the organization; the second layer focuses on the tactical objectives while the bottom layer mainly on the operational objective. Discussion involved sales, supply chain, and common functions team. Each of these units is represented in the categories with red, yellow, and green arrow representation indicating how much of their initiatives are aligned to the overall business strategy of the organization.

In Figure 6, green arrows indicate that the program is aligned to their long-term objective while red has a negative effect and yellow stands for neutral. For example, in the supply chain area, there is still prevalent use of slow, unreliable multiple data sheets in one of the organizations many of which are not accessible by all of their workforces. This process of following the traditional means of working for the need of the hour has put the organization's main objective of evolving as a frontrunner in digital competency in the niche marketplace in a stake of a detrimental effect.

As described by the leadership member from one of the participating organizations:

> We started first as an online sales company. So the primary aim has been to be digital. In fact, we could allow different forms of payment. But the inventory management became a problem and hence decided anyway to lead a shop. Our venture went in soft acquisition also in eastern Finland. The key problem today we face is the lack of resources and regulatory compliance. So, we are more pulled in to resolving operational issues than looking at a long-term goal. I decided to divest from the soft acquisition. We have aimed to be a preferred grocery outlet for Asian and African community. The big shops are really not the competition, but we are run into a contest with neighbour shops. To answer you, we have not come out well in defining our strategy in AI yet. Understand, we need some alignment internally. Yea let's mark it down. (Respondent 11

Also, strategies and objectives were not aligned to the business operations. For example, one of the retailers had changes in management and its sales weakened. Its vision is to become a leading distributor by expanding the operations to Europe being a rebate shop and was mostly cost centric.

> ..based on our vision and mission, we are required to make an investment in expanding. We are looking for the opportunity but currently also required to manage the operations as we are accountable for top line growth. (Respondent 4)

There was a misalignment between the organization's strategic objective to its tactical and operational objectives. The key findings from this discussion are highlighted here below.

Table 6. Summary of the "strategy and objectives" findings in the participating organizations.

Area	Key Findings	Implications
Vision	Almost all organizations had aspiration into their vision. E.g. 1. To be a leading retail distributor in Europe 2. Preferred Grocery outlet for Asian, Oriental, and African products	Few elements like by when, involving partners and collaborators were missing. This would make the vision an open-ended statement giving less opportunity to enabling staff to manage this eventually
Mission, Purpose, Values	The purpose and mission statements have been compiled upon well thought out decisions.	Adaptation for change will be difficult Defining a performance model for individual business units that aligns with the or-

	Considerations like customer experience, sustainability factors, data reliance were slightly missing New entrants have thought of digital differentiation. But 60% of the company's operations and processes lies in traditional thinking	ganization goals can be difficult. Interpretation and alignment are left to the experienced management team. Still, the dissemination to the lower layer in the organization can mean different Company culture and values if not aligned to the adaptation to changes, brand image can be affected.

This table summarized the findings from the "Strategy" of the organizations. Once the adoption of AI is defined in an organization's strategy, few mandatory elements define the successful implementation. Digitalization of the organization is the fundamental step. The next section investigates this important phase.

3.3 Analysis of Organizations Mindset of Thinking Digitalization as Primary Aim to Scale

The current state analysis used various parameters to assess the digital maturity of the organization. The main focus was to understand how the company is aligned to the following parameters:

1. Reaction Level to new requirements and initiation of newer projects
2. Digital initiatives underwent during the last 2 years and discipline in executing it using emerging technologies
3. Organizations system integration capabilities like file sharing, data and application connection etc., and how are they managed
4. Types of integration that exist in the organization and plan for future
5. Adaptation to change, Strategy execution, focus on enterprise programs.

The logic of consolidating these questions during the interview was to assess the competency of the organization and its digital function to see their ability to think Digital as a function holistically, focusing overall and not the parts. It was also to know if the Business functions can understand how a change in one area will affect others, how changes should be made and in what order to achieve maximum results. Digital maturity, as perceived by the participating organizations, is about infra to insight and will need digital adoption across all levels in the organization.

The results of the Digital maturity analysis were categorized into 4 different levels. Level 1 depicts basic or the amateur digital maturity, which can be termed as a beginner level to the Digitalization process while Level 4 depicts the maximum competency an organization can envision today, which guarantees that the organization is focusing its digital initiatives holistically and do understand the interdependence in those initiatives by focusing digitalization as an enterprise effort and not a part approach. Interviews were conducted to make a note of "how" the digital initiatives were carried out along with "what" such initiatives. Summary of key findings is described in the next section below.

The key findings of the Digital maturity analysis indicted the following. Almost all companies qualified to be willing to pursue digital evolution in their strategy. Different questions used during the discussion is provided in Appendix 8. Assessment of digital maturity defined based on interview discussion is shown in Table 7.

Table 7. Current state analysis using the second perspective. Blue dots show their digital maturity *(based on Gartner's evaluation framework).*

Reaction	**Digital initiatives**	**Integration capabilities**	**Types of integration**	**Adaptation to change**
Internal Process Centralized. Fully scalable infra solutions. Security, data protection, PCI compliance accounted	Can use any emerging technologies. Internal competency part of organization culture. New initiatives aligned to overall Strategy	All integrations managed completely in-house. Highly skilled along with trend tracking	Multiple methods exist and are widely used across the organization	Scale and Speed at adoption are rapid. Executed as a form of strategy. Focus laid on the enterprise level.
Initiatives based on budgetary estimation. Case to case	**Process Established.**	**Cross-functional groups can be easily formed. Collaboration form of rich culture**	**Integrations moderately and appropriately optimized factoring risks for**	**Innovation includes trial and error. Adaptive and changes looked at as Organizations need**

			the applications	
Prioritization mandatory. Propose and request for approval	Tool technology projects and program need prioritization	Roles exist. Organizations are able to promote	Able to adopt integration and track its benefit	Change management and approval core capability and communication process defined
No formal management	All processes standardized.	Architects roles formalized. Domain architect exists	Managed by Center of competency team	Change management exist

As seen from the columns, the table must be read bottom-up. Across each row, evaluation is done to understand the current state of the organization. The blue dots in the table shows the score providing us vital inputs on how the organization's digital maturity is reflected today. The average score of all the participating companies is considered in the depiction. Some excerpt comments from the interview are listed below:

> …We need to prepare an investment note and provide the prioritization number. This is done based on idea generation tool. In case we have two or more demands, the item that has the top priority would most likely be addressed. We have a definition to mark priority and is followed across all functions. (Respondent 7)

> …Biztalk server is our main integration platform. So far, it is working seamlessly. Integrations are well established to disparate systems and our commercial associates. (Respondent 11)

In all the organization's current IT architecture, business integration with the user interface is not strong. There are interdependence and strong impact on different channels. There is also a long time to market for newer features and customized solutions with organizations. Organization fall under bracket range of 2-2.6 in a scale of 4, 4 being highest. In other words, organizations are emerging in the digital maturity curve. Hence, inducting AI will require either an evolutionary or a revolutionary route. This practically means that organization can at best become to industry average by evolving in their roadmap. By being revolutionary, organizations will be required to break the traditional

productized solutions for example and adopt a flexible solution with components used that allows an organization to be in control by governing the development roadmap rather than depending on the vendor roadmap.

The key findings are summarized below:

1. Digitalization and Agile ways of working are pre-requisite and should be part of the strategy. This was the fundamental gap.
2. No stabilized or scaled working model that creates value, benefits, and economic upsides. (Example agile way of working was seen but not consistently applied)
3. Digital development will need support and mindset to strengthen the adoption
4. Technology has been static and needs developing proactively the architecture and tech enablers.

Summing up, this section analyzed participating organizations appetite in considering digitalization as a primary aim to scale AI and summarized the key finding from this discussion. The next section lays focus on the fundamental element of AI, which is data.

3.4 Analysis of Data Availability

According to Akerkar (2019), data is the fundamental element to the adoption of AI. He describes that data is used to generate necessary true information, which gives rise to learning, thinking and proper understanding of a problem area. With further knowledge of concepts and models, a higher level of knowledge called wisdom traverses which by further enhancement leads to intelligence.

First and foremost, there is a need to have a high volume of data to develop and apply artificial intelligence. The other important feature is that the data should be collected at different intervals and preferably integrated from a variety of sources. So, this section is not just about the data availability but also to assess what type of data is available. The following main questions were considered for assessing the current state of Data Availability.

Is relevant data available for use? E.g. in personalization. How does the company utilize its data? Is data handling the customer services compliant under privacy and security principles? How is data synchronized across systems? Do you have a single source of truth? How good is data quality currently? Is there a data governance process?

The key findings of the Data availability analysis indicted the following. The participating organizations had a plethora of data and reports without standardisation resulting in redundancy. Lack of aggregation leading to manual processing or high query response time. Suboptimal use of technology and design principles. However, these data are available in silos. There are efforts made to create conformed dimensions to consolidate the data for cross-functional use. When looked at the business unit level, data also has some quality issues. For example, Active customer data is not monitored. Figure 7 provides a schematic representation of a different set of data available. Data is fragmented across multiple data marts. Consolidation of this data would require cross-collaboration within the organization. Cleanups are missing because in the same retail organization that introduced the loyalty membership recently about 37% of members are already inactive and have been for about a year since the time of introducing the loyalty feature.

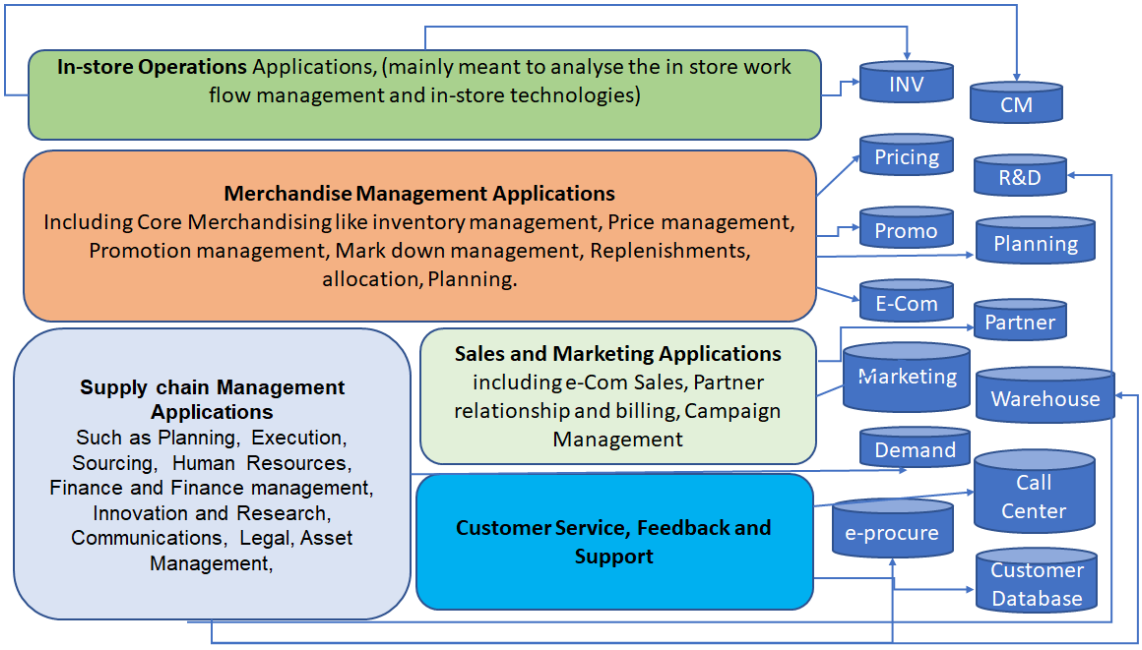


Figure 7. Summary of the current challenges and gaps in the current data source.

Customer data is also available through different sources. Example, Social membership subscription. Data today is utilized to send newsletter, campaigns, to track loyalty bonuses. Some experiments are done to create automated marketing materials. Not all

campaigns are measured although it is tracked by most of the organization. Excerpts from the interview are highlighted below

> No, we do not have a triggered communication as such. Data today is utilized in customer email communications and are focused on one-off push campaigns. (Respondent 12)

> We have not measured our campaigns, but we have a general feeling that most of the campaign messaging is irrelevant to a receiver and perhaps we will need also a focus on actual data. (Respondent 11)

> …We have identified three focus areas in keeping our customer communication. Looking to bring in communications more towards targeted messaging and from just email to multi-channel and have a focus on having one view of at least a few of our customers. This will help us have an enabling or the preference center and automated decision making. Now we are in the assessment phase. We are aware that it's all Data now. So, our aim is to be getting the required data and technical set up in place to start any customer-centric initiative. (Respondent 12)

All organizations are compliant with GDPR. Data synchronization has topical issues. Some data integrations are not in place. 2 companies are looking at creating a personalization platform. There are daily data imports that happen nightly, and one company uses near real-time data. But to precisely define the core issues in each area, a detailed level of engagement and assessment would be required further.

Although there is an abundance of data in the organization, the way it is processed, organized plays an important role in digital adoption. There is also huge unstructured data that will require processing and using it should have some meaning or purpose to it. Another typical problem that the organization is facing currently is in processing and transmitting this data further. For creating machine learning concept or for creating any model for problem resolution, it is prerequisite that data acts both as information and knowledge source. But the upside to this is that all organizations have identified this to be the fundamental element for their AI adoption and have embarked on to some or the other data transformation journey to unlock future AI opportunities.

Summing up, this section introduced to the key challenges faced by the participating organization that will require some investment for a long-term commitment and effort to get the data foundation right. Consolidating means collaborating between different business units. This encourages an organization to have cross-functional teams to enable

such initiatives which now opens another important area of analysis. The next section now focusses on this crucial element, which is process and culture.

3.5 Analysis of Processes and Organization Culture

This section will focus on describing different aspects analysed to understand the organization process and culture. This is an important part of the assessment as the way employees in the organization behave to any situation and different processes followed will decide how the organization is heading towards its overall strategy. Culture is a broad concept and exceedingly difficult to evaluate it due to its different forms of expression. The study focussed more on the main objective to understand if the organization is principled, innovation-driven, technologically oriented, process minded. So, the main questions were to understand if the company is reactive to situation or proactive, their behaviour to the external environment and their relationship with third parties. Also, the study tried to review the organization's performance management matrix and the freedom to express ideas in the organization.

The following main questions were considered for assessing processes and organizational culture: How are the roles and responsibilities defined and assigned in the current process? Is the process automated for parts where it is applicable? How are different processes followed typically in an IT project? How do you see these processes and are they efficient? Is the process well documented? Have you adopted an agile methodology in development areas? How are process outputs tested? How is communication between project teams and others followed? Are there any metrics used to measure the performance? Have you faced any technical issues in the organization? Do you have performance management programs? How would you see the rewards and recognition program?

The key findings from the Process and Organizational culture analysis indicted the following. Roles and responsibilities between participating organizations and other parties seem to be defined but individuals are seen taking up multiple roles. Key members of the staff are generally well experienced and have a long tenure in the organization. Certain tasks that are part of the process have not been assigned to anyone due to missing staff. Three (3) of the organization had no resources to take up frontline work.

> …We have defined roles but sometimes we must take up additional responsibilities. Very often there is a situation of reassessing our priorities as

> in some cases we have not been able to realize until quite late that we will not meet the organization expectations. I have seen the changes in the working context, but we are in a different shift. We need to train or have more resources… at least that is what has been our proposal. (Respondent 3)

Staff were also new and still in the process of understanding the domain in general. Some parts of the process still involved a large portion of manual work. Staff generally were aware of shared responsibilities amongst the different teams and also related to the vital focus areas, but some amount of time is spent in unproductive tasks that could be automated. Documentation is available only at a high level. New resources or personnel referring to the documentation would require guidance to understand it further. Most of the detailed level process information relies on experienced staff. This kind of process will cause potential risk if the personnel quits the organization.

> I am new to the organization. The induction process is well defined, aware of my roles and responsibilities, but you will find and understand the ways of working more when you do the role. The demand has been that I take up the job responsibility immediately as I join so am learning through the process. (Respondent 7)

Organization culture and process is usually a hazy hypothesis that is usually overlooked in most of the organization. Good organizations like to create its culture and behaviour as its core value and uplift it also as a corporate identity. This section explained the key findings from the process and the organization's culture point of view. With that, we move to the next sections that focus on the last perspective of current state analysis, which is an organization's ability to use best in class tools.

3.6 Analysis of Tools Utilization

Tools and technology are an integral part of any digitization and digitalization journey. The connection between tools or the technology adopted and organizations status on digitalization is certainly vital. The stronger the adoption of newer tools and technology, the organization can outsmart the competition.

Although this was one of the assessment criteria in the Digitalization section, analysis of tools and its utilization was a separate meeting to find not just what but also how by questioning the missing link with "why" to explore AI application opportunities. The following main questions were considered for assessing tool utilization: How and what different technologies are used? e.g. Personalization communication. How is the overall

Technology IT architecture? The result indicated the following, as shown in Figure 8 below.

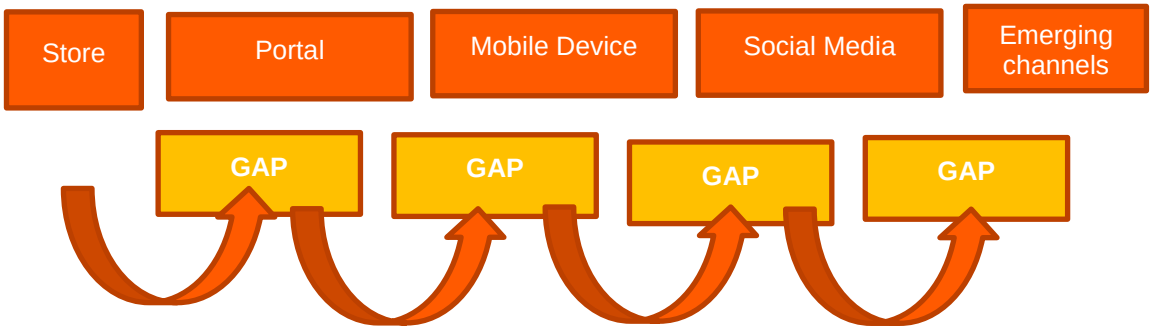


Figure 8. Gaps identified in different tools utilization.

As shown in Figure 8, the results found a gap in the way these are used in different channels. As shown in Figure 8, tools used at the stores are considered to be the master. The rest of the channels do not support full features in most of the organization. Some excerpt comments and further findings of this analysis is analyzed below:

Two of the grocery retailers did not even have a website during the discussion and were mainly marketed using social media.

> …We had our own website when we were purely managing e-commerce sales. But upon moving to brick and mortar, had to forego the website and reestablish also due to transfer of ownership. It started well by promoting our sales through social media. But we are focusing to have online sales platform and into marketing. We will also have a mobile app. (Respondent 11)

Mobile push notification is sparingly used, there are features overlap in the functioning of different business units, the tools used also are different while one business unit had invested in a reputed tool the other had invested on another tool. (HubSpot and Microsoft). Potential benefit and development roadmap are missed out by distributing the workflow in two different applications when any of those tools can produce the same result.

> ...It started with simple PoC but the tool had some promise and the unit decided to proceed with it due to cost efficiency and types of integrations that they were looking at. But organization understands that we are building dependency here. There is a separate track of considering business-driven objectives to finalize our architectural and applications landscape. We should be looking at harmonization sometime. (Respondent 15)

For the purpose and objective of this exercise, a SWOT analysis from all these five perspectives is done typically looking at AI as an opportunity.

Figure 9 provides the summary of results of the organization's strength, weakness, opportunity, and threat seen in general and categorized into only three areas to keep our main focus of the study simplified.

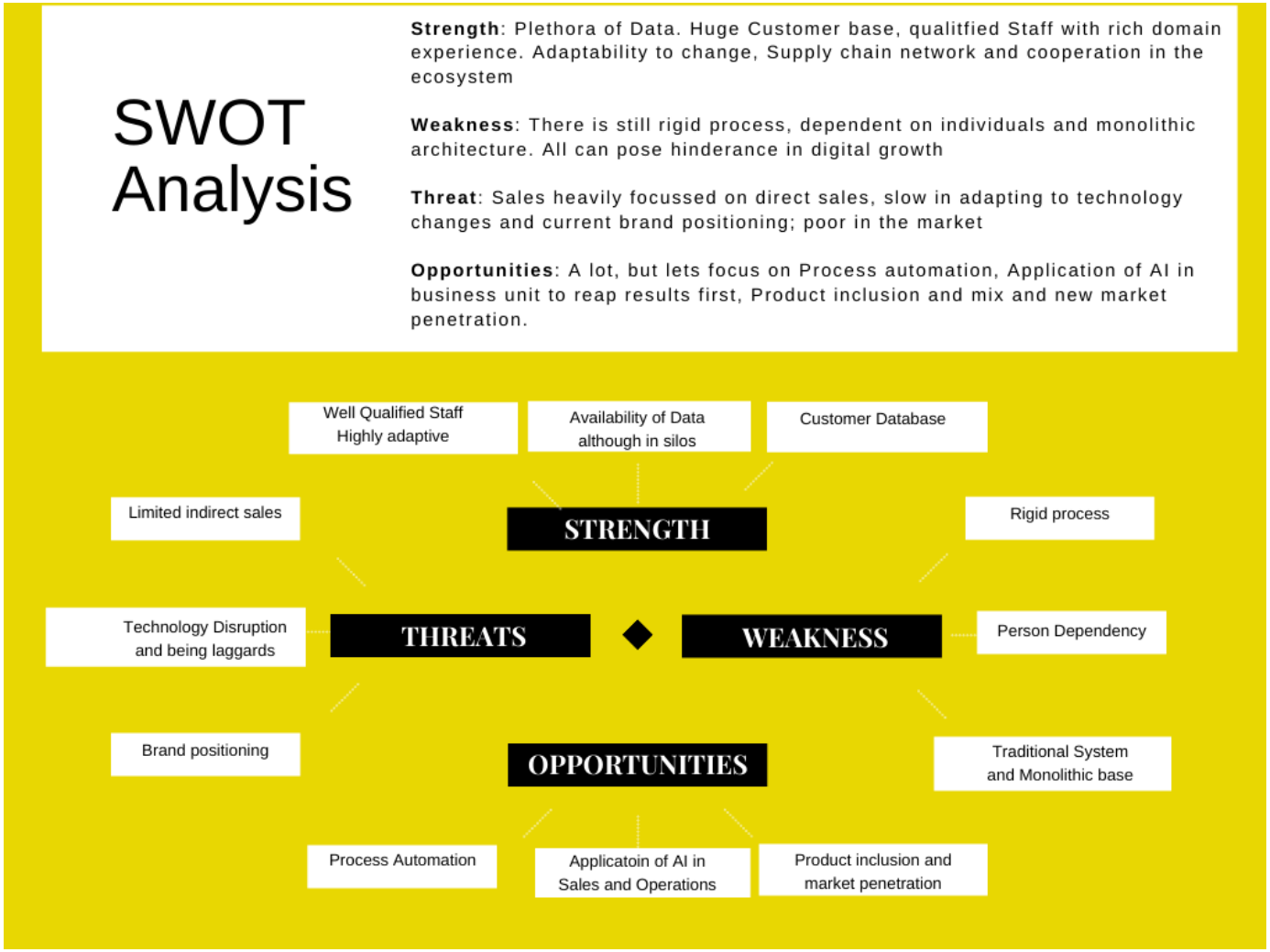


Figure 9. Summary of SWOT in participating organizations for digital AI opportunities.

Strengths: Participating Organizations have a plethora of data although in silos. This is the basis for any digital and AI initiatives. In addition to this, the staff has been very well experienced and have seen different challenges in business, which carries huge domain expertise that is critical during the process of applying AI. As consumers play a key role in creating the demand, the organization fairly seem to have invested already in storing customer data that again will be invaluable in the context of AI application.

Weakness: Organization also follows using some old-fashioned technologies. It is in good faith that they are happy to see the system is serving the purpose today. According to the leadership team migrating to another system will mean the necessary allocation of resources to manage, which the organization do not have it. There is heavy person dependency to drive major initiatives. Being slow adapters to the changing digital technologies can pose a threat in the rapidly disrupting world.

Opportunities: Several opportunities loom the organization and can be started by first introducing a simple automation process in a typically familiar and routine area. Application of AI in the Sales and Services unit will differential the organization very quickly. Similarly, there can be innovations in product inclusion and market penetration. All of these will provide immediate benefit to the organization.

Threats: All organizations had a heavy focus on direct sales. There has been no indirect sales channel. This is a traditional business model. Especially when the competition is fierce, an organization need to adopt indirect sales options and also if possible, collaboration or partnerships to enhance inorganic growth. Having not thought through on the indirect sales channels can potentially pose a threat to their business model in future.

Some of these brands are not positioned well. One of the shops did not even come up on google search although it has acquired a good customer base with the recent launch of their store. This is due to poor brand positioning and failure to optimize the search engine. This will be critical too to influence customers purchase decision.

After now carefully reviewing retail organizations strengths, weaknesses, threat and opportunities, next section aims to highlight AI ambitions expressed and noted down during these discussions.

3.7 AI Focus Areas

Upon conducting the current state analysis based on the above mentioned five different perspectives, few recommendations based on industry best practices on enabling the organization to adopt digital technologies in general and AI in particular were discussed.

The research looked through some of the existing data to understand customer behaviour. One of the niche grocery outlet headquartered in Helsinki metropolitan region had introduced customer loyalty program to enhance customer experience and in a survey conducted with 226 respondents, 100% of them confirmed to use digital means to track and place the request on items not available at the store. 46% of them expressed that if they would love to have basket recommendation for their purchase or send as a reminder when stock exists. However, it is important to note that almost all members belong to the upper white collared category mainly comprising of expatriates residing here for work purposes. Undoubtedly, their digital usage and know-how are far greater than consumers in developing nations across the globe.

An organic and inorganic mode of discussions were carried out with (1) Challenger in Oriental and Asian commodities retailer; (2) Oldest Afro-Asian Market in the Helsinki Metropolitan region; (3) Two of the major American consumer goods retailer; (4) One of the biggest trading sectors in Finland.

Top use cases wish list from the organic discussion is highlighted in Figure 10.

Figure 10. Wish list noted down during the data collection process.

There was no consistency in the terminologies used by these companies. For example, AI meant different things in each of these companies. There was a slight misinterpretation of process automation to be AI. To better reciprocate this going forward, a simple

description of the fundamental difference between these two terminologies is given below

Process Automation is a plain deliverable done based on the predefined setup and are referred as process automation and as these are done by machines or computers that act as a Robot, it is commonly referred as Robotic Process Automation. (RPA). It is possible to use the latest technologies that can help to create accurate, consistent, and reliable answers to human activities by simulating them. This is a programmed solution for performing some repetitive work. Usually, this is done by setting up fundamental rules or business logic to execute such actions. So, there is no thinking in this process.

On the other hand, artificial intelligence is an intelligent model of human operations. This can explore solutions to problems like humans do.

Artificial Intelligence is a system that has almost the human capabilities, which means there is intelligence built into it. AI can hence perform human activities, like recognizing speech, natural language, think, plan, and even solve problems.

In order to also assess the downsides to adopting AI, the following three main questions were asked: (1) What is blocking organizations from adopting AI? (2) Assuming Step 1 is solved, how do you adopt AI? (3) What will be your priority? List of all other questions reviewed during the discussion is provided in Appendix 11. The outcome of the conversation can be broadly classified into 3 main categories.

Now the remaining portion of this section focusses on a few strategic ambitions company came up with. The answers were mainly to do with achieving something better, using AI to solve huge pain points. To see if AI can create new business opportunities, and to check if the organization can differentiate itself from the competition by using AI.

Figure 11 depicts the summary of responses received on what's slowing the organization in adopting AI and different viewpoints on adopting it along with the priority.

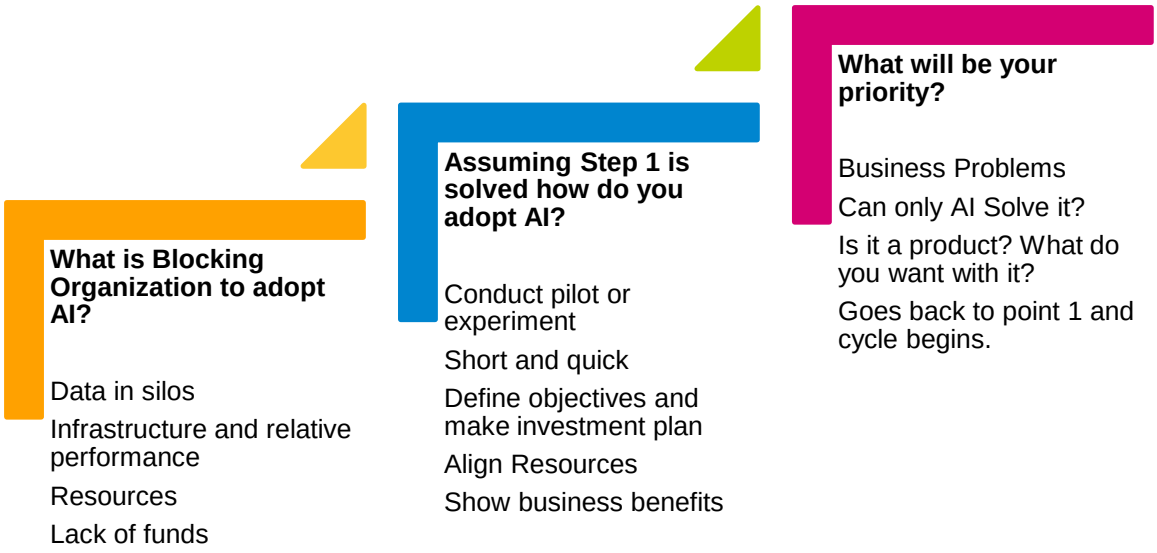


Figure 11. Downsides to the adoption of AI.

Further delving into the organization's ambitions on adopting AI, responses were collected and grouped under the following main themes. The first category is about using AI to increase revenue. The second category relates to applying it to enhance customer experience and last but not the least is related to optimize the cost by inducing AI to bring Operational efficiency.

These were also some additional questions that popped up based on the themes during the discussion that lead to a few focus areas. For example, personalized information targeting, next best offers, drive online conversion rates, increase customer trustworthiness, virtual assistance, bots, increasing efficiency and risk reduction.

Table 8. Themes derived out of the current state analysis discussion.

Revenue Maximization	**Customer Experience**	**Operational Efficiency and Cost Optimization**
Can I do something to maximize my revenue?	Can I enhance my customer's online shopping experience?	Can I automate the Sales process and internal tasks?

Conversion commerce is growing. Can I change it to contextual commerce? Can I have some intelligent data to provide the next best offers	Shopping assistant to provide a personalized shopping experience	Can I control my inventory cost by more informed decisions? Can I have AI manage my rack space? Can AI help in faster resolution of customer complaints?

The whole list of use cases listed down during the discussion is available in Appendix 3.

3.8 Summary of the Current State Analysis

The current state analysis included these five important perspectives which emerged out of the responses of the participating organizations. Strategy, Digital maturity, Data, Organization culture and Adoption of tools all play a particularly important role in applying AI and building it at an enterprise level.

The key findings of the current state analysis can be divided into two groups.

First, there were several significant gaps identified during the current state analysis. Based on the findings from the current state analysis, the key gaps in the 5 main categories (Strategy, Digital maturity, Data, Organization culture and Adoption of tools) were required to be grouped to address our focus area for the study.

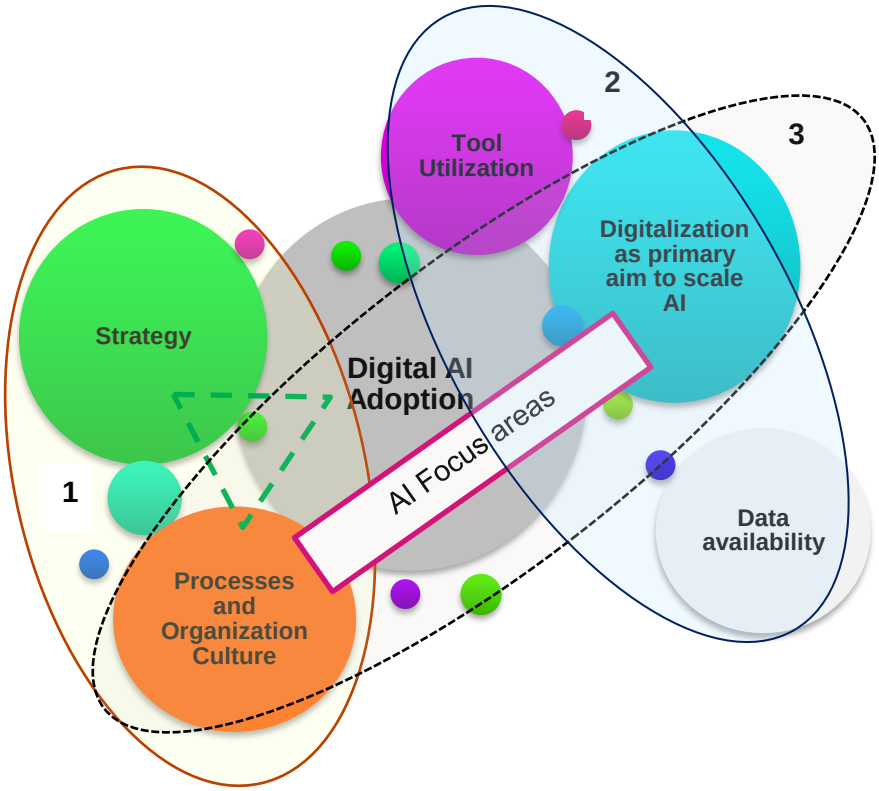


Figure 12. Logical grouping of identified gaps into 3 categories.

Digital AI adoption is a journey and it needs to have a proper direction. That comes from Organization strategy. You need to have the organization culture aligned to support the strategic direction. So, as depicted in Figure 12 this is logically grouped as category 1. The next important aspect was the digitalization. Here data acts as a foundation, processes as building block and tools as a technology enabler to make digitalization a reality. It is reasonable to group this as our next category and depicted as area 2 in the figure. However, the focus areas in adopting AI will require building capabilities and also has the same elements that need repeated series of change and innovation. Building AI capabilities for sustenance is the third category represented as area 3 in the figure. The category 2 and 3 have an overlap and categories 1-3 forms basic themes for this study and is identified as follows:

1. Strategy alignment: the definite need of having organization strategy aligned with the initiatives.
2. Digital maturity of the organization and the role of AI in today's world.
3. Building AI capabilities to derive maximum business value.

Second, the current state analysis paid significant attention to the interest of the participating organizations to selecting the priority use cases that need to be addressed first in order to advance the most prioritized areas of the participating organizations. The bubble diagram shows these interest areas and points to particular prioritized use cases based indicated by the participating organizations. Size of the bubble indicates the weighted average of favoured demands with all organizations. Associated small bubbles belong to the same family of prioritized use cases. The top priority list from the discussion is represented in the bubble diagram in Figure 13.

Figure 13. Priority items to solve the business problem.

Based on the results, the mainstream concept that Retail organization can consider for a strategic AI adoption is (1) Retail experience. To establish the other priority use cases, a separate track of short survey was conducted independently with IT professionals elsewhere to know viewpoints from an IT perspective. The questions were drafted in such a way that the response is closed-ended. This was to make sure no ambiguity arises due to their views. List of 100 top IT professionals who are or were involved in Digitalization

in their respective organizations was chosen for the survey by contacting through a professional network. A brief backdrop with a rationale behind this study was provided and was requested to provide their unbiased viewpoints. To get a transparent opinion and to avoid close professional acquaintances influencing the decision, the survey response was kept anonymous. 53% responded to the survey out of which 88% feel AI is required for retail, 38% prefer personalization against any other AI use case. About 63% feel predicting the next utility basket and delivering it straight to the home using predictive analytics and personalization is a cool feature. The survey questionnaire and the response can be found in Appendix 5.

The gaps identified in the current state analysis laid the foundation to search through industry best practice by doing a desk study with the existing literature to come up with a conceptual model for proposing the solution.

4 Existing Knowledge and Best Practice for Building a Digital Roadmap for Retail

Upon reviewing the current state analysis results of the participating organizations and analysing the pain points with their ambitions for AI and digitalization, the next step was to explore the steps on the road to AI based on existing knowledge. This section looks at addressing the three main gaps recognized during the CSA by seeking best practices and important considerations through existing knowledge for building the initial proposal for this study.

4.1 Theme 1: Strategy Alignment - Alignment in the Organization Strategy

In today's business world when things have changed so drastically, few still argue why there is a need for Strategy. Having a strategy enables everyone to ensure that day to day decisions fit in with the long-term interests of an organization. (Bruce and Langdon, 2000). But it is also to do with the competition. The key to coping with it is to have a strategy that acts as an antidote to the competition (Livermore, 2020). It also encourages everyone to work towards a common goal. Building an AI roadmap should be part of organization strategy too.

Bruce and Langdon (2000) defined a strategy as a declaration of intent, defining where you want to be in the long-term. According to them, it is to understand the processes involved and how to avoid potential pitfalls to help you plan successful strategies. The fundamental factor in defining an organization strategy is to have a clear Vision, Mission or Purpose and Aspiration. A strategic plan needs a clear statement of the company's purpose, its reason for existing in the first place. Components of the strategic plan may take time to work through, but by putting the ideas about company's purpose and values together you can make a big first step towards the creation of a plan that can lead to organizational success. According to Betz (2016) to bring about a desirable future, the leadership team in the organization should take up this as a primary responsibility and make choices about the future. He describes this in a concept called modern decision theory sketching out three main postulates. First one states that the decision should be made based on actions that are being directed toward a future. These actions are for both short term and long term and finally, the third that relates to wisdom, where the management team is expected to create a brainy action to drive the organization forward.

4.1.1 Inculcating main elements in the Organization Strategy

The latest studies recognizing the growth of AI systems as decision-makers (Agrawal et al., 2017; Parry & Cohen, 2016) help to think about developing strategies to impact the outcome in a way that is most favourable for companies. One style of management known as a Systems Model of Leadership introduces leadership as a fusion of Wisdom, Creativity, and Intelligence – all of these traits will soon be infused in the AI solutions (Sternberg, 2007).

Strategic planning is a dynamic, backwards-thinking process by the collective leadership of the team, department, or organization. They define their ideal future vision and core strategies necessary for consistent and meaningful annual operating plans and budgets. Then they drive the achievement and measurement of this vision (Haines, 1995). Thinking is more a discipline and by doing it from a different point of view reasoning with a comprehensive focus on the thought erupts. But envisioning the future and constantly looking to have Strategy aligned with it will ensure the organization is taking small steps ahead.

Bruce and Langton (2000) recommend following a strategic framework that will help to look at what is happening now in the context of where the organization wants to go. It will help react to problems, can inspire, and motivate people, and communicate well.

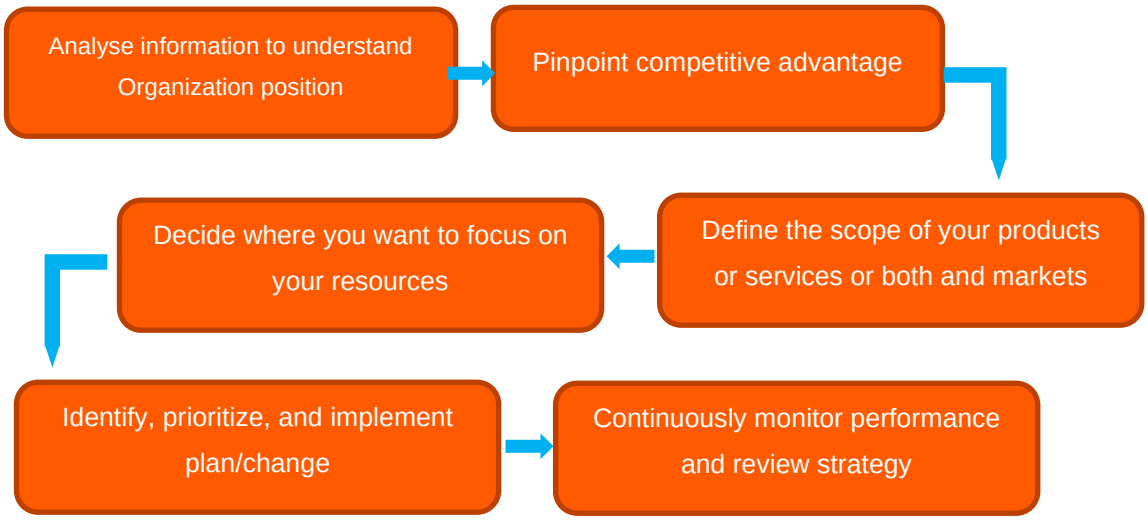


Figure 14. Following the Strategic Framework based on Bruce and Langton (2000).

As shown in Figure 14, building a strategy can be divided into three main processes: analysis, planning and implementation. During the analysis phase, we need to collect as

much background information as possible to help make an informed decision. This stage is crucial because the facts we have in hand will influence the direction the organization decides to take. The analysis will include various aspects like what is happening inside the organization, looking carefully at aspects of own and other parts of the company that may influence the plan, what customers want, how competitors are operating, and what the research trends or developments in the industry are. The aim here is to draw up a clear statement of the strengths and weaknesses of the organization position as well as a list of opportunities for the future. (Bruce and Langton 2000).

Retail organizations can distinguish themselves through their identity and branding. The goals are to create synergy, leverage, and clarify within the portfolio and relevant, differentiated and energized brands (Aaker, 2004). Corporate Identity and Corporate Branding are in a way interconnected but have some distinct definition through which it is easier to understand the difference.

Corporate Identity includes all of a company's visual aspects and design elements by looking at which it is easily or instantly recognizable (Knapp, 2001: 4). In other words, it is the overall look and feel of the business in the eyes of its stakeholders. E.g. a circle that has red, white, and blue colour in it, anyone including small children recognize it as Pepsi. These are the unique Logos of the company. While as described above the corporate identity is all about look and feel of the business, Corporate Brand can be defined as relating to the emotional relationship between a customer and business (Ormeno, 2007: 17). Corporate Identity of the business should usually be unique. If it can establish its unique identity, it is then recognized as a brand. To do that company has to focus on its marketing practice to identify itself and differentiate its product or service from other products/services. Applying AI in this step can be one of the differentiating factors and the potential remains massive. (Sterne, 2017: 7)

The companies have the choice of adopting either differentiation or an integration strategy. Most companies like we see in the examples of Coca Cola and Ikea have adopted an integration strategy and implemented their strategy in everything they do accordingly. There is no right or wrong answer to this. The organization can explore extreme options and evolve specific actions that the organization is looking forward to bringing an impact at a large scale. Digital technology can transform the value chain and stimulate business strategy (Bob, 2019: 30)

Globalization has given rise to cross border trade and a new dimension for small and medium-sized organizations also to discover new revenue outside local presence. In the ever-increasing global economy, events in foreign lands impact the overall business more broadly on a daily basis. Today, we have seen the impact of Novel Coronavirus that evolved somewhere in Asia but has made a huge impact across the globe in the overall business of every organization. *'To stay competitive, companies must stop experimenting with digital and commit to transforming themselves into full digital businesses'* (Olanrewaju et al. 2014).

The next section describes how aiming to evolve in digital maturity helps scale business in an organization.

4.2 Theme 2: Digitalization - Digitalization as Primary Aim to Scale

As per Global Market Insights (2017), penetration of AI technologies in the retail market will exceed 8 billion USD by 2024. But before applying AI as a mainstream technology in the ecosystem, organizations are required to adapt rapidly into the digital world to reap benefits and create opportunity. It also provides an edge over the competition. According to Kane et al. (2017), migrating to cloud or becoming compliant by introducing business into mobile platforms is not a digital strategy. These are not restricted to only technological issues. Technologies keep evolving. So, the organization should be worrying about how they need to conduct business diversely in order to take advantage of the changing technological trends.

In one of the initial surveys on digitalization (McKinsey Global Survey, 2014, p. NOS), executives reported that their CEOs "are more involved in digital efforts than ever before" but at the same time say that "their companies must address key organizational issues before the digital can have a truly transformative impact on their business."

Companies should analyse very well the opportunities produced and the dangers generated by globalization. (Kotler et al. 2009: 9). As the internet enables us to get the required data of a potential customer or a prospect, the company is able to contextualize the business communication accordingly. It is also true the other way around. Customers are able to do research on their requirements by analysing the available options in the market. Hence when it comes to e-commerce, companies need to be precise, explicit, and truthful in the offerings. (Epstein, 2004: 9-19)

Companies are required to catch up with the pace. Digitalization and, later, digital transformation are drivers for changes in the corporate world because they establish new technologies based on the internet with implications for society as a whole (Unruh and Kiron, 2017)

4.2.1 Meaning of Digitalization in context to business

To set up Television channels at home, the device offers the user to choose either an analogue or a digital mode, which means they are distinctly different. These are electronic streams for which Analogue has absolute value over time and digital can be decoded as streams of zero (0) and One (1). Very often digitization which is a fundamental framework to scale up to digitalization is described as a process of converting Analogue data into digital data. In the business world and a very easiest layman's sense, Digitization can be described as communication or contacting a customer for various sales or service offering using digital technologies. So, the traditional pamphlets, brochure, survey sheets, lottery application, discount voucher, a coupon is all replaced with computer applications including mobile devices and other paperless channels. But this is about the technical part of an explanation. While digitization covers the technical process of converting the analogue signals into a digital form, the multiple phenomena including different processes applied for transforming from traditional and other forms of paper use techniques by an individual that will broadly then include the society and the individual's interactions with the organization are defined as digitalization (Legner et al. 2017).

According to Macaulay et al. (2015) and Wortmann and Flüchter (2015), due to the advent of connected devices through internet, which is termed as the internet of things there would most likely be more than fifty billion devices interacting with more than one device through the internet that will have a huge impact in the economy in 2020. So as technology progresses, there will be a direct impact on different businesses and society. Such advances radically change the existing business model and it has been evident ever since companies like Uber, Airbnb, Google, Amazon, Alibaba introduced an entirely new idea in their businesses. Hence technology drives innovation in business. Terms like uberization are becoming more common. Artificial intelligence is another technology driver that is changing the way business models are looked at. According to Halleck (2015) and the UN International Telecommunication report (2014), there is at least one (1) out of five (5) people that have an account on Facebook today. As the access to mobile devices is increasing, there are more people having access to vast information

that has led to different challenges to businesses. Customers determine the way they would want to be treated and interact with the organization (Hosseini et al. 2018) and hence winning the customer is not easy.

Digitalization can mean different things for different organizations. One organization may look at introducing online and mobile channels to ramp up sales, while another may utilize the process of automation in production operations as per their driving business models. But this is actually not digitalization in the true sense. Many who adopt this route fail to scale when the need arises. As per Henriette et al. (2015) a digital makeover plan requires applying digital competencies to provision changeover of the working business model that would influence the whole company, particularly in the operative procedure, workforce, inside and outside users. According to Parviainen et al. (2017) digitalization touches numerous facets of businesses, involving IT, strategy, business models, goods and customer services, core processes, administration, corporate culture and so on. The fundamental element to the success of becoming truly a digital company is to launch wholly a renewed business model that touches on Digital across all business units within the organization.

The traditional business environment is now transformed to newer tools and technologies. For example, in communication, the following has precedence in today's communication strategies: e-mail (still is used extensively), Social media network (Facebook, Instagram, WhatsApp, Twitter, LinkedIn, etc.), Podcasts, Webcasts, Vlogs, Blogs, dynamic online contents.

Many organizations use digital technology to improve channel coordination through e-commerce platforms and mobile customer service. The aim is to integrate a variety of technologies (apps, social media, etc.) into their channel portfolio. It is not just to improve in business objectives of the organization, but to enable employee-to-employee networking and collaboration also. In particular, the growing adoption of team-based collaboration software and revamped business process has helped organizations become more agile (Finnegan, 2020).

Many digitization efforts aim to automate or increase the productivity of labour-intensive business processes to match customer expectations. Digitalization and Digitization help to improve efficiency in the business of companies. There are four level of digital maturity

: Companies exploring, doing, becoming and being (Bersin, 2018). These new administration practices transform the nature of leadership compelling establishments to change and find more “digital leaders”, implement trial and agile management practices, and occasionally do away with senior executives who cannot keep up. At the most basic level, this transformation also stresses that organizations grow digital facility by coaching individuals at all levels on digital jargon, knowhow, and renewed business models. (Kane et al. 2017)

It is noticeably clear that Digitalization has changed the business landscape and the ways of working. It has changed the way products or services are sold, it has brought a new dimension in marketing and promotions, it has given rise to cater to customer complaints and requirements better, it has also brought in various opportunities to optimize operational processes, given a meaning to being truly globally local and able to have seamless communication without any cultural or geographical barriers. But what is more important is to also be wary of the fact that digital transformation cannot be one size fit all. There is a digital divide in every part of this world. The only way an organization can succeed is by being an active listener. It is important to be flexible to adapt to change and newer technologies and constantly assess conditions in the area of trade negotiations, information flows and exchanges, financial operations, education. Companies need to be watchful and decide if they would like to have their business strategy standardized or localized or have a blend of both. All of these will mean companies need to invest in these resources and consider it to be an asset to drive the organization growth. (Artelt, 2017)

It is important to keep in mind like Porter and Heppelmann (2014) said that Digitalization is not the new thing or going to be the final stage of information technology. Earlier what seemed to be an area that was more relevant to only technologist or an engineer is more relevant to everybody today. So, digitalization is here to stay and as a first step, any organization that is intending to add value in their supply chain should first look at maturing in their digital efforts that will also help in introducing and applying newer technologies as they emerge. (Urbach & Röglinger 2019)

This section described the meaning of digitalization and how this has become relevant in today’s age. Business models like that of Uber, Airbnb is adopted more and more amongst different industry verticals. The advent of newer technologies has disrupted

every business and analysed why companies should invest in digital technologies when digitalization is only going to change the business model further.

Customers are far more connected with business and absolutely play a very dominant role and this is an extremely important trait in digitalization. Hence, it is imperative to now understand customers better and be able to identify across the touchpoints to develop a strong and lasting relationship. Static contents are replaced in a dynamic way using mixed expressions and different media. Social CRM can provide a suitable bridge for companies to be more market-oriented and, in turn, compete better in digital markets. (Lipiäinen, 2014). The next section describes how changing consumer trends have defined new-age retail in the industry.

4.2.2 Changing consumer and new definition of Retail

In the olden day's context, knowing customers by segments or personas was just enough to cater to their needs. Purchase power has drastically changed and there is a whole lot of new channels and data available today. (Figure 15)

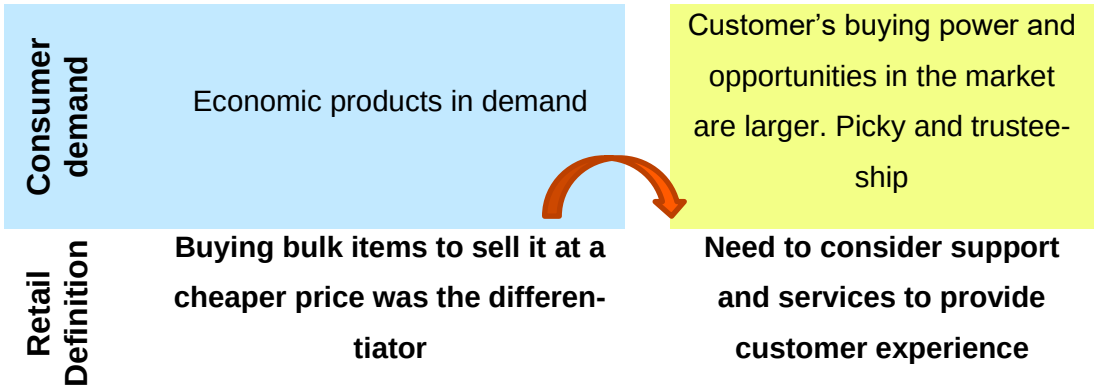


Figure 15. The new definition of Retail. A shift in consumer behaviour (summarized by the author).

Consumer aspirations are different today. Retail organizations should bank this as an opportunity and look at collecting the data from different interactions with customers throughout their purchase journey and offer more personalized benefits.

Store visit is not required to test the products. Leaders in the industry have already introduced digital technologies that enable consumers to review the product and visualize it online. The shopping malls are being revived to include stores ready to adopt technology advances and offer customized services to customers. According to Leake (2020), CEO

of trend analytics Rebecca Minkoff store has introduced what is called connected or Smart Retail that defines the future of in-store shopping from customer experience to the retail experience. Smart mirrors and dressing rooms offer recommendations to its customers which increased its sales 200% since the introduction of the smart retail concept, which proves that consumers today are tech-savvy and appreciate the use of technology while investing on emerging technologies do help organizations to gain benefits.

So, it is important for retail organizations to rethink their targeted customers by understanding more than merely knowing their demography or purchase habits. It is important to question what technologies can help enable customers' preferences by questioning the basic needs of them and who they are.

According to a report published by RILA's (R)Tech Center for Innovation and Accenture (2018) consumer shops in an indistinguishable way through a variety of seamless digital channels and also through the store as the advent of digital technologies have transformed the retail experience. This has allowed consumers a chance to access their favourite shop even being remote and at any time of the day. The important part is that retail organizations have seen this to be a big opportunity and in their survey majority of executive leaders believe consumer behaviour will transform the industry and also consider that their own business operations will be changing or required to be transformed.

According to Sood, 2002 as quoted by Nicholas, et al. (2003) Organizations should differentiate themselves from others by not just selling or offering service but should look at adding value, be relevant and stay consistent. Nicholas, et al. (2003) concluded in their study of digital information consumers that consumer behaviour today is a tale of shift and a big change. As per them, the tracking consumers will show some unexpected behaviour that would create a void if not addressed and as sales and services transform towards more digital, the organization has to build the intelligence in between to address the vacuum at least at the same speed as it is impacting the industry. Humans filled the intelligence so far and will continue doing it. But humans have emotions and react to the situations differently and as the demand is too high, humans can get tired. In this digital world, intelligence is required consistently across all possible channels, which means providing precise output tirelessly and several times faster to reach all the digital users without being biased.

This essential element is filled using machine intelligence. Deep Learning assistive abilities enhance efficiency by letting employees concentrate on important and value output work. Individuals fault in processing is also decreased if not fully, as automation can diligently execute repeated actions and can also notify people of possible irregularities. Technologies have enabled to create such intelligence. (Perez, 2017: 139)

This section looked at how consumers demand has changed as a characteristic of evolving digital drivers. It also highlighted the opportunities such as consumer-led features offer to a retail organization. It calls aloud the need to fill the void of uncertainty in consumer behaviour by building artificial intelligence in their approach that should influence their decision and purchase actions. The next section will include the opportunity artificial intelligence will bring to retail business.

4.2.3 The opportunity of Artificial Intelligence in Retail sector

Artificial Intelligence (AI) will create a new reign in the world of retail. The major companies in the retail industry have equipped themselves to cash in the opportunity.

McKinsey Global Institute (Sept 2018): "...AI has the potential to deliver additional global economic activity of around $13 trillion by 2030, or about 16 per cent higher cumulative GDP compared with today. This amounts to 1.2 per cent additional GDP growth per year…"

4.3 Theme 3: Building AI Capabilities - Developing AI Capabilities in the Organization to Derive Business Value

The fundamental need as part of having an AI adoption roadmap in the organization is build required capabilities. AI includes a large variety of tools and technologies, which is repeatedly now referred to as the prominent application driving change in IT. AI is dependent on a few foundations, mainly digital and data. And it needs to be applied, which means it has to be trained using data. Wladawsky-Berger (2017) in a blog post has quoted that those who adopted the digitalization during the early stage are heading towards AI maturity now. According to him, there are six common features these early adopters possess:

1. There is a new build on top of the earlier one which means they are fast scaling along with the advent of newer technologies making it difficult for late adopters to be left behind. So, staying close to emerging technologies is vital
2. The size makes a difference. Companies that have invested big stays in the race and those wanting to experiment have moved nowhere.
3. Adopting not only one technology but multiple technologies keeps them ahead.
4. Investment into those businesses that are close to the heart of an organization. It can be in Sales or production or customer service.
5. Driving innovations using AI. Not simply looking at doing something efficient to cut cost. Innovations should drive revenue growth.
6. Last but not the least, executive commitment and support for newer technologies. (Wladawsky-Berger (2017)

According to Mendes et al. (2016) having frequent interactions would be invaluable to well appreciate the knowledge and innovations in complicated ecosystems Innovation means the expected usage and launch of fresh and improved methods of performing events (West, 1997; West and Rickards, 1999). Understanding this, innovation can be appreciated as a procedure that involves the creation of advanced concepts (creativity) and activities targeted in the direction of applying these new ideas inside the establishment (Rank et al., 2004; West, 2002). Several occasions, people carry out pioneering actions with the intent of providing value from them, as they frequently occur in reaction to the ambiguity and needs of the situation (West, 2002).

Fountaine et al. (2019) from Harvard Business Review mention that many organizations face internal obstacles within the organization to take up initiatives in AI and recommend breaking down the barriers to move ahead and capture the AI opportunities. The following are the recommendation summarized from their review: (1) Do not see AI implementation as plug and play to expect immediate results; (2) Do not see this as a pointed requirement; (3) Do align the culture, structure, and ways of working in the organization, supporting this initiative will become easier. (Fountaine et al. 2019)

The following is the three important changes that will be required for an organization:

1. Develop cross-functional teams, which means create a team to include operations folks, business folks, people from IT, Functional consultants. All of them will be required to work together

2. Move to data-driven decision making and away from leader-driven decision making
3. From rigid and traditional way of working to experimental, agile and flexible mindset. (Fountaine et al. 2019)

According to Anderson & Coveyduc (2020) for a small and medium-sized retail segment, the core competency is not having an engineering team to build the AI solutions. This can be true even for a bigger organization as their core competency lies in the domain. So, they recommend that this is when the organization has to question their policy if, at this point, the company would like to foster ideas from outside or go ahead and make a big decision of creating this in-house.

HBR further recommends using a hub and the spoke model for allocating the ownership of building AI Capabilities. The following Figure 16 shows the division of key roles in building the capabilities and also to look for economies of scale within the organization.

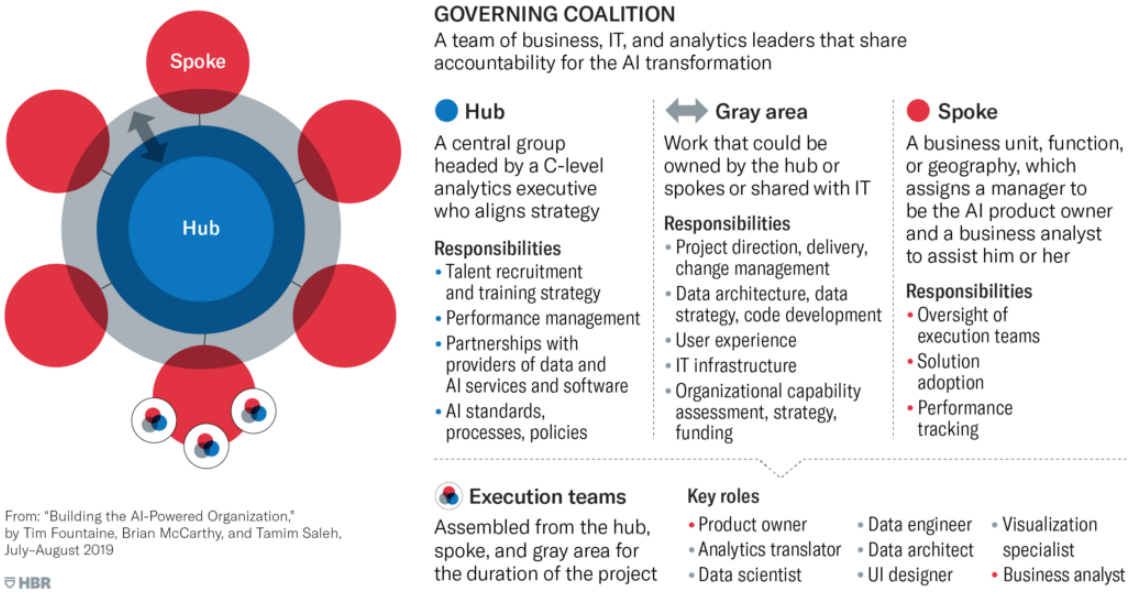


Figure 16. Hub and Spoke model of organizing AI for scale (Fountaine et al. 2019).

Mainly the team constitute a central group that is aligned to the Strategy referred to as Hub and Spoke that constitutes representation from different business units or functions of the organization. Hub is responsible for sponsorship and governance, while Spoke takes care of responsibilities similar to a project manager. There is one more classification termed as Gray area. It so happens that during AI transformation process certain roles and responsibilities can be owned either by the Hub or the Spoke. So, where there

can be shared responsibilities, such areas are bucketed into this group that can take up responsibilities like providing project direction, be involved in change management or part of user experience, IT infrastructure or organizational capability assessment, data strategy and so on. (Fountaine et al. 2019)

It further indicates that it is Hub that should foster AI capabilities. It should look at creating communities where all AI experts can use it as a forum, a forum where all minds can meet to share their best practices and different processes that have been followed which eventually as helped them in developing AI across the organization.

Additionally, it is also important to note that most of these responsibility areas also fall under the grey area. This is not a prescriptive approach and neither a science. It is difficult to segregate this into these specific groups early on in the early adoption cycle. So, the recommendation is that all experts like the product owners, business and data analyst can be part of the Hub initially until the business case is nurtured, executed and expected outputs are achieved and can be slowly be transitioned to the Spoke group. But this can be considered based on organizational influencing factors. But the fundamental rationale to this is to ensure that the adoption is done at rapid speed, based on different AI models of complexity and involves a fair amount of innovation. (Fountaine et al. 2019)

AI belongs to multiple tools and technologies that can be merged in various methods to sense, cognize, and perform with the capability to learn from experience and modify over time (Akerkar, 2019).

The following figure shows the key classification of AI.

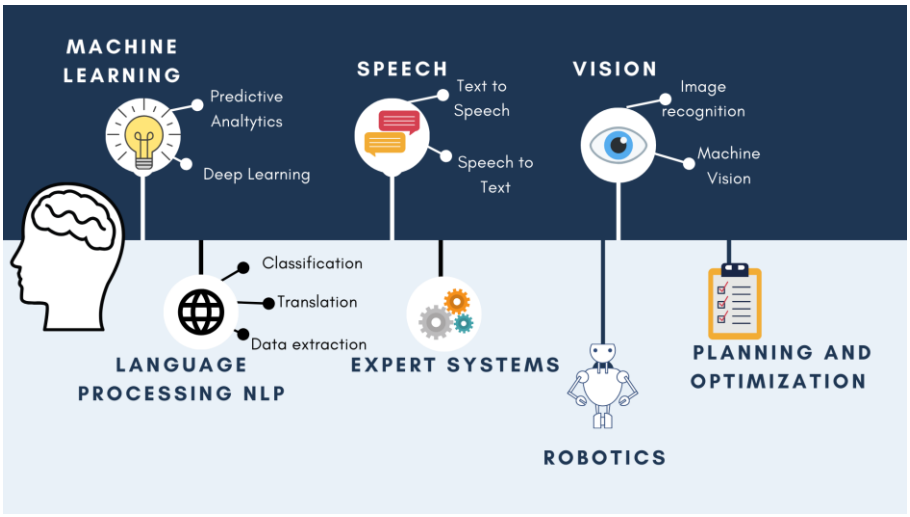


Figure 17. Two main classifications of AI based on its implementation (Alex. 2019).

AI implementations are mainly headed into two routes: (1) Answer to the questions or concerns related to the evolution and performance of AI machines to get them additionally in agreement with person abilities (top tier in the figure above); (2) Developing a program that associates all the recent accomplishments into one structured procedure successful in fulfilling the requirements of the market. (bottom tier in the figure) (Alex. 2019)

While focussing on all these elements is required, one must keep in mind that the results that AI delivers today are still more centred around a specific task. Humans have flexible learning and contextualizing understanding. According to Avanade a leading digital innovator that powers its solution using Microsoft ecosystem has suggested focussing on building organization capabilities that are focussed on human-centric AI. The following figure provides an overview of what it takes to succeed in adopting AI.

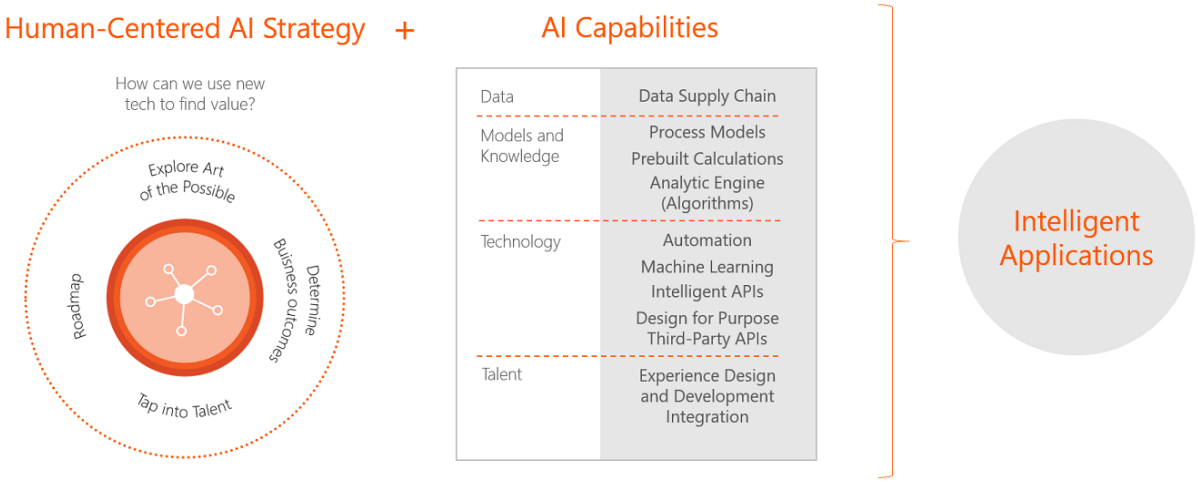


Figure 18. Application of Artificial Intelligence – a pictorial representation focussing on business outcomes (Avanade.com).

If summarized, the following are the different set of capabilities.

1. Computer Vision: Obtaining information through images
2. Natural Language Understanding: Process, analyse and action large amounts of natural language
3. Reinforcement Learning: Try random actions, get feedback, Learn
4. Multi-Modal AI: Use a variety of types of data in combination (e.g. image, audio, time-series, speech, text, rules etc) to train a model.

When AI is applied to get business results in a number of functions or different geographies the complexity also increases.

Gartner recommends following a seven-point checklist provided here below:

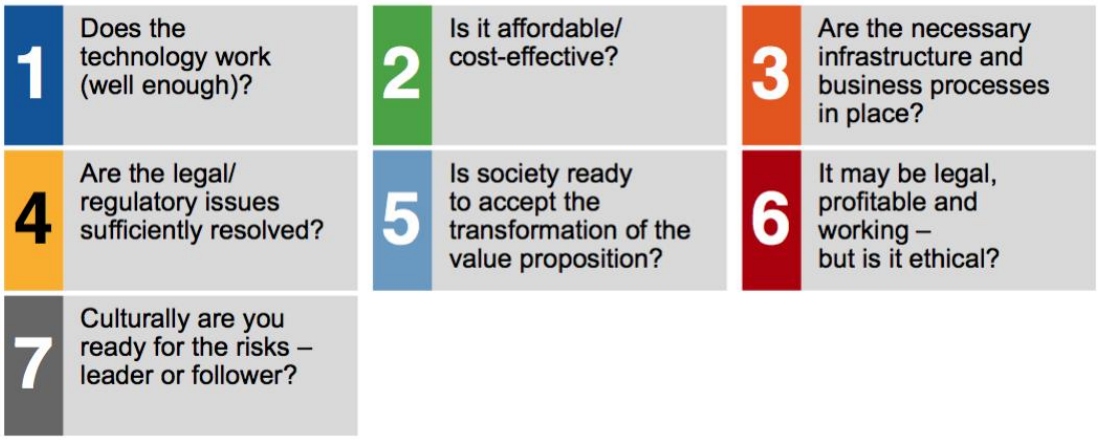


Figure 19. A 7-point checklist for AI adoption (Gartner 2017).

Summing up, this section covered a summary of desktop research conducted on identified areas classified into three themes such as alignment of strategy, digital maturity and building AI capabilities in the organization. It is a network and will require a cohesive focus on all these areas to make adoption of AI successful.

4.4 Conceptual Framework

All initiatives are driven based on business requirements today. This section focuses on an approach to arrive at opportunities methodologically using outputs from the Current State analysis, desktop research and by building on to insights on various trends and relevant drivers in the industry.

All participating organization were very eager to adopt an AI strategy and to arrive at an initial proposal, a conceptual framework as shown in Figure 20 was formulated. The new and emerging technological innovation is explained using an almost obsolete weapon of war today. This is used here because organization these days use the term called must-win battles. Adopting AI in the organization should be one of them. The framework typically shows an arrow targeting at the pointed result. The arrow here represents the organization's digital AI roadmap. During the CSA discussions, it was clarified that organizations like to approach this step by step and hence use case prioritization is considered as the core for making that big leap in the AI roadmap.

The following Figure 20 provides a pictorial representation of key areas that are required for developing digital AI roadmap relevant for this thesis:

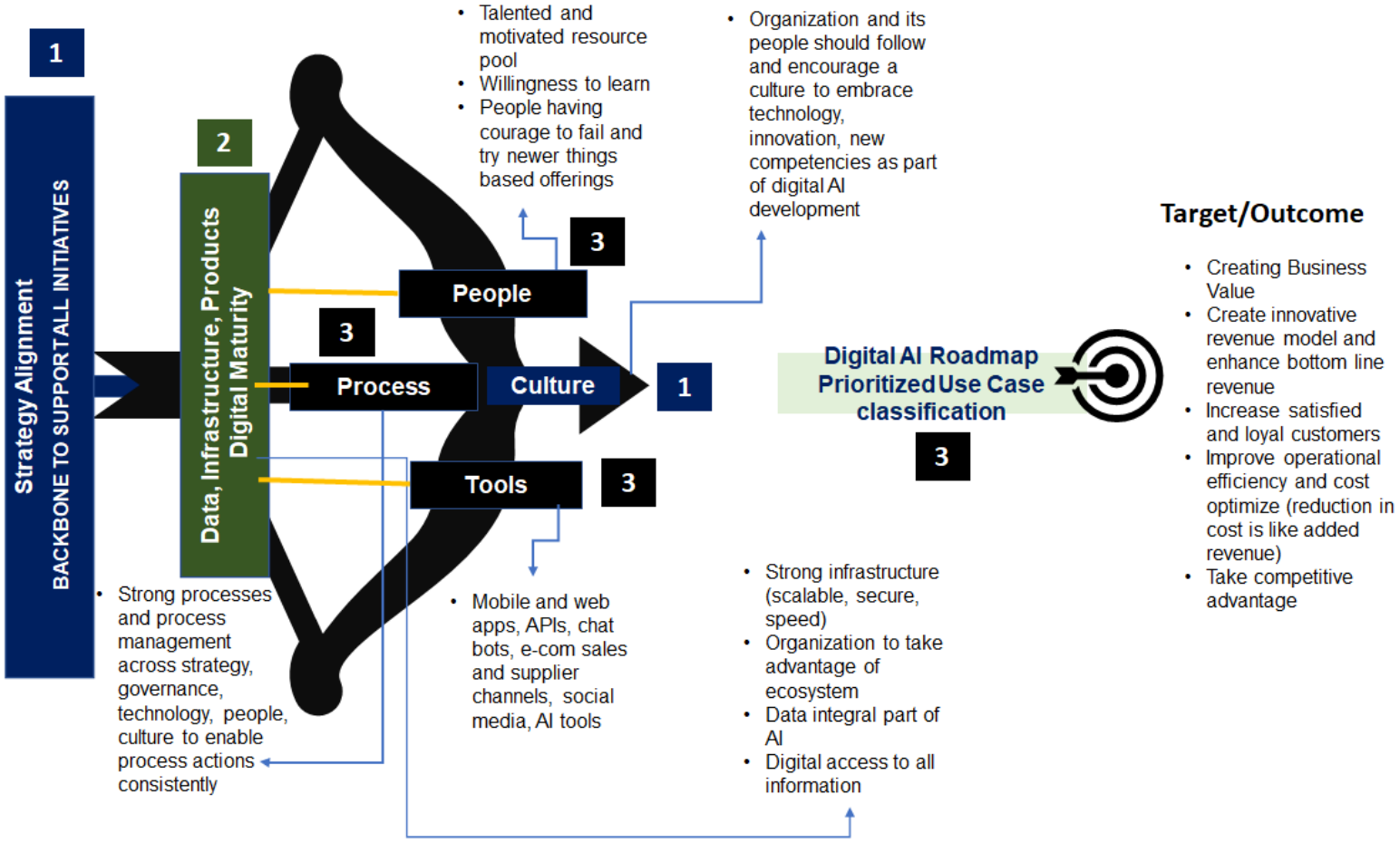


Figure 20. Conceptual Framework to develop a digital AI Strategy for Retail.

The framework is represented by a bow and arrow. For the arrow to traverse in its desired path there are some fundamental requirements. First and foremost is setting the right direction of the arrow and this is done by setting the right strategy. Then comes the fundamentals, the string, which enables the arrow to travel in the path laid by the organization and strength of the bow that holds the arrow. These are conceptualized into 3 important themes.

1) Strategy alignment: Organization should consider digital AI as one of the main frontrunners to differentiate itself against the competition. There is a need for leadership intervention to understand the benefits organization can get through the application of AI. So, you can see the strategy alignment represented as the backbone of this initiative. Further, the culture of the organization represents the arrowhead. Organization culture not only will drive the arrow but also help in securing the right outcome. Organization and its people should follow and encourage a culture to embrace technology, innovation, new competencies as part of digital AI development.

2) Digital Maturity: Organization must assess in terms of their data availability, infrastructure set up, digital products available and also see where they stand in the overall digital maturity. Strong infrastructure (scalable, secure, speed) that should enable the organization to take advantage of the ecosystem and have Digital access to all information. Data is an integral part of AI. The more the products are digitized, the better it is to apply AI in these products. These elements define the strength of the string and will support the arrow to traverse either swiftly or slowly. If this is insecure in an organization, the chances are the arrow direction, which is the digital AI roadmap is heading to fail.

3) Building AI Capabilities and Priority Use Cases: This is solidly represented by three (3) main sections and they are People, Process, and Tools. The stronger these elements are, the powerful the bow would be. The important aspects of each of these sections are briefly described below:

People: The concept of a disciplined team should be introduced. People cannot consider this initiative as doing it on top of some operational work. So, people with right competency, capabilities and specific role differentiation would be required because this is now moving towards emerging and specialized job focus that will shift towards result orientation aligned as per organization strategy. As explained in the figure, people here should comprise of the talented and motivated resource pool, that has the willingness to learn and also have the courage to fail and try newer things, which is also to be ready to

experiment. Roles like Data scientists, Scrum Masters/Product Managers, Translators, System specialists are few of the main personality profiles that will emerge. The organization should be wary also about the fact that leading organization move these roles increasingly in-house, which similar type of roles earlier used to be done by contract or external suppliers. The organization can decide this but fundamentally having access to the right people is required to enable such initiatives.

Processes: Organization should define and follow processes that are formulated at the company level. This is where an organization has to lay focus. The operational focus should shift to performance focussed. It is important to also have processes to evaluate the success of the projects and individuals. As most likely during the progression of this phase, the entire project will not be done as a whole but instead will focus on most viable and immediate result areas, the reviews should be based on milestones or after completion of a deliverable. This also means value and risk assessment is an ongoing process and has to be managed throughout the lifecycle.

Tools: Organization should focus to have a workspace or collaboration tools to support teams as such initiatives will require cross-functional presence. Project charters, information, deliverables need to be shared widely internally to ensure that there is transparency. So, the company should invest in such a platform that can fill this need. In addition, moving to software as a service solution or software will provide the organization with some bandwidth to focus on newer developments than looking into operational or burning issues. Best in class tools should be available for customers too, which means mobile, web, chat, e-com platform, and introduction of such customer-friendly tools is a must.

The conceptual framework here may look complicated, but it is an ingredient to succeed. It is important to also apply the use case prioritization in developing the Digital AI Roadmap for retail organizations. This process of prioritizing the use case is done in the initial proposal in the subsequent section.

5 Building Proposal of the Digital AI Roadmap for Participating Companies

This section merges the results of the current state analysis and the conceptual framework towards the building of the Proposal using Data 2.

5.1 Overview of the Proposal Building Stage

Artificial intelligence has taken a fast pace and changing the ways of working. But it is primarily a man-made defined system. In many cases these are applied to make man efforts simpler, easier, robust, and also to replace human efforts. But similar to the induction of a human resource into an organization to function designated work, Artificial intelligence needs to be defined and designated. It is not a plug and play model. But it should be applied, have identified business case, availability of data, budgetary needs, suitable working team to implement and manage, and all of this should form part of overall Organization strategy.

The preliminary proposal was drafted based on the following steps. The first and foremost step was to review the minutes of the meetings and the notes taken during Data 1 collection. Recommendations that came up during this process were considered once again. Next, Data 2 collection was conducted as more centric on what the organizations are expecting as a proposal to ensure that the effort utilized is eventually serving the purpose. The best practice and suggestions from literature were also accounted for here and discussed during Data 2 collection stage with the stakeholders to get their views. The discussion was open with some guided questions. Lastly, all collected information from Data 1 and 2, including some quick wins that the organizations were expecting along with their long term goals were considered as the foundation in developing the Digital AI roadmap (with the focus on AI adoption at an enterprise level and scaling up the digital AI maturity). Thus, based on Data 1 from CSA, the inputs from CF, the following Data 2 the Proposal was built.

5.2 Findings from Data 2 (pulling together CSA, CF, and Data 2 for the Proposal)

The following table provides the details of the requirements requested for the initial proposal by the participating organizations.

Table 9. Key findings from the Data 2 collection round.

Key Focus Area from the outcome of CSA and CF	Suggestion from stakeholder from participating organization	Description
Embarking a Strategy renewal process	Provide a clear guideline on how the organization can renew its strategy	Looking forward to seeing how the renewed strategy can be better communicated and implemented in the organization
People	What kind of roles will be required? Define different responsibility areas	Provide an overview of how the set up should be kind of best-case scenario so we can refer and work towards becoming the best.
Processes	Provide the digitalization process as we are looking to firm this up	A high-level picture of this should help us prepare for this.
Priority Use cases for AI application	It is a huge list of use cases. Provide the top use cases for us.	This should help us set up a focus group to embark on to the AI adoption with some concreate business results

These requirements show in Table 9 were stressed by the participating organizations in order to succeed in the rapidly changing business environment. The participating organizations realize that retail organizations need to transform traditional ways of working and exploit the potential of digitalization. However, participating companies are unable to utilize an agile way of working and digitalization are the main blockers in achieving competitive advantage.

Hence, the organization wanted to lay focus on only those portion that they needed guidance. They requested that the proposal be focused mainly on those components than making it a generic view. This excerpt from the interview illustrates a typical view of the participations organizations:

> …We think that the identified 5 point areas are relevant and appreciate it. We also don't want this to lie only on the paper. We need something to act on. As indicated, we have started with few initiatives in the organization already. With due credit to the workshop, I want to lay emphasis on those areas that we can take forward from here. As mentioned earlier, there is a

> lot of data related initiatives going in parallel. I don't want to bring up another track and confuse this internally. I believe they know it is important and am also confident that they will enable it for us. I am keen to see the proposal from other aspects. For example, what people composition should I have on the team? (Respondent 11)

As the example demonstrates, before adopting AI and building a roadmap, these companies need to take up a litmus test to see where they stand on their overall strategy and its alignment using AI as one of the business strategy, data collection and digitalization as the foundation to AI adoption and their investments in building AI capabilities. This includes mainly people, processes, and tools. Organizations have expressed a keen interest to adopt AI and hence most of the companies were looking forward to receiving a proposal to renew their strategy.

5.3 Initial Proposal

The initial proposal evaluated two different approaches through which Organizations could scale up in the Digital AI adoption. It is important to note that these two approaches were explained and discussed with the participating organizations before the actual Proposal building. Two different approaches are:

Option 1: Evolutionary Approach

In this scenario, the organization is assumed to retain the current "as is" strategy for their digital journey and consider adoption of AI by applying it to specific use case in the organization.

In this scenario, it makes sense to assume that organization will adapt working culture required to transform from a traditional approach. It is described as an evolutionary approach because it aims to address organization's agility and functional coverage issues through a gradual process of improving and further developing the current technology through adding new solutions or building it, rather than a complete replacement. In this scenario, companies need not look to find compelling business cases and investment note for tiered approval

Option 2: Revolutionary Approach

In this scenario, Organization is assumed to evaluate through various methods including market scan and analysis report, multiple options of replacing the entirety few of the application stack to make it digitally compliant and have a scalable platform with a best-of-breed and, primarily, off-the-shelf set of components, except for certain features where an option providing very direct control by the individual organization is envisaged. The most sophisticated and flexible solutions available on the market would be assumed to be evaluated and compared as part of this exercise, aiming for maximum configurable components in all back-end system and maximum development flexibility in the front-end systems. It is described as a revolutionary approach as it aims to address organization's agility and functional coverage issues through a leap forward in terms of the technology stack, consisting of replacing the current monolithic platform with a set of best-of-breed solutions.

Importantly, all participating organizations preferred the Evolutionally approach, and the subsequent proposal is built according to this preference. The participating organizations decided to follow this approach for the following benefits:

1. It helps build the solution without disrupting the business much.
2. All customization done so far in the existing applications are retained and hence training to users will be only required for add on features.
3. As the existing applications are well accustomed and development will be internally driven, the organization can have better control over the implementation road map
4. Cost of implementation can be within budget and can set priorities as per Organization need
5. Development can be initiated with short notifications and does not require any market scan or heavy pre-development and implementation processes.
6. There will not be any migration plans or fall back and business continuity plan required to be drafted at a large scale.

Second, upon the selection of the evolutionary approach, the Proposal was shaped according to the logic derived from CSA and CF, namely following these main themes:

1. Strategy Alignment and Organization culture
2. Transformation in People and Processes
3. Application of AI based on the priority Use case.

The further sections will provide focused guidelines for the leadership team to lay emphasis in their budgeting or investment decision and help in not only adding value but also to make quick progress in the AI digital strategy.

5.4 Theme 1: Strategy Alignment and Organizational Culture

The leadership team must look at renewing and re-aligning the organization strategy to induct digitalization as a mainstream requirement and embedding into organization culture. In the organization, they may come up with resistance internally. The company will require to re-think the current Vision and Mission. For example, in one of the participating organizations, as highlighted earlier, Vision is to become a leading distributor in Europe. It is the responsibility of the leaders to define not just what but also how.

Vision and Mission statements run as the backbone of an organization strategy. It is a set of questions framed by answering which provides a command over different motivation and is recommended for organizations to use this template to summarize their strategic decisions. These questions provide in addition to Vision, Mission and Values of an organization, the clues to look at Business areas, from where the organization can aim for the volume of growth, what different aspects are reviewed to create the competitive edge in the market and how each of these strategic objectives can be derived into a specific action plan to achieve.

The responses to these question would point to an integrated Organization strategy that considers various factors including competition and business strategy and in a situation where adopting AI in the business has precedence, vision should include a high level of ambition in implementing AI with technology and management choices.

Figure 21 shows where Organizations Vision is coupled with its growth strategy and a business unit and its Digital strategy is amalgamated as one of the competitive strategies to make more general Mission statement into a more specific action plan, which provides interconnected objectives to be reviewed completely.

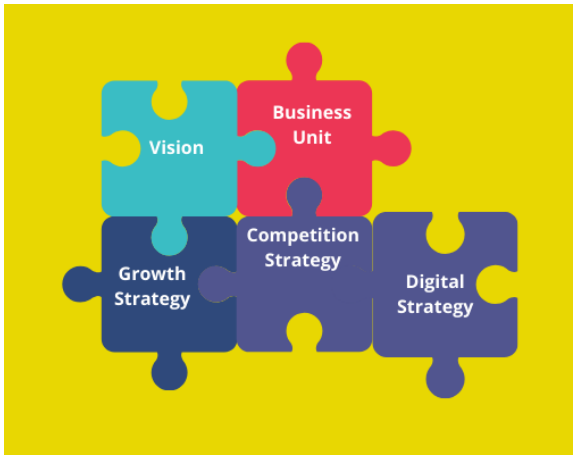


Figure 21. The coherence of Strategy to its Vision, an alternative approach for effective strategy execution.

Figure 21 shows the digital strategy embedded as one part of the competition strategy. This is an iterative process where synchrony of key choices is a must. The proposed approach is to achieve a true effect on operative level work and not to just create a communication or a marketing slogan.

Next, the participating organizations took part in a detailed discussion on how to implement the Strategy.

Figure 22 shows the steps in a funnel how the organization can practically understand the strategy and commit to it.

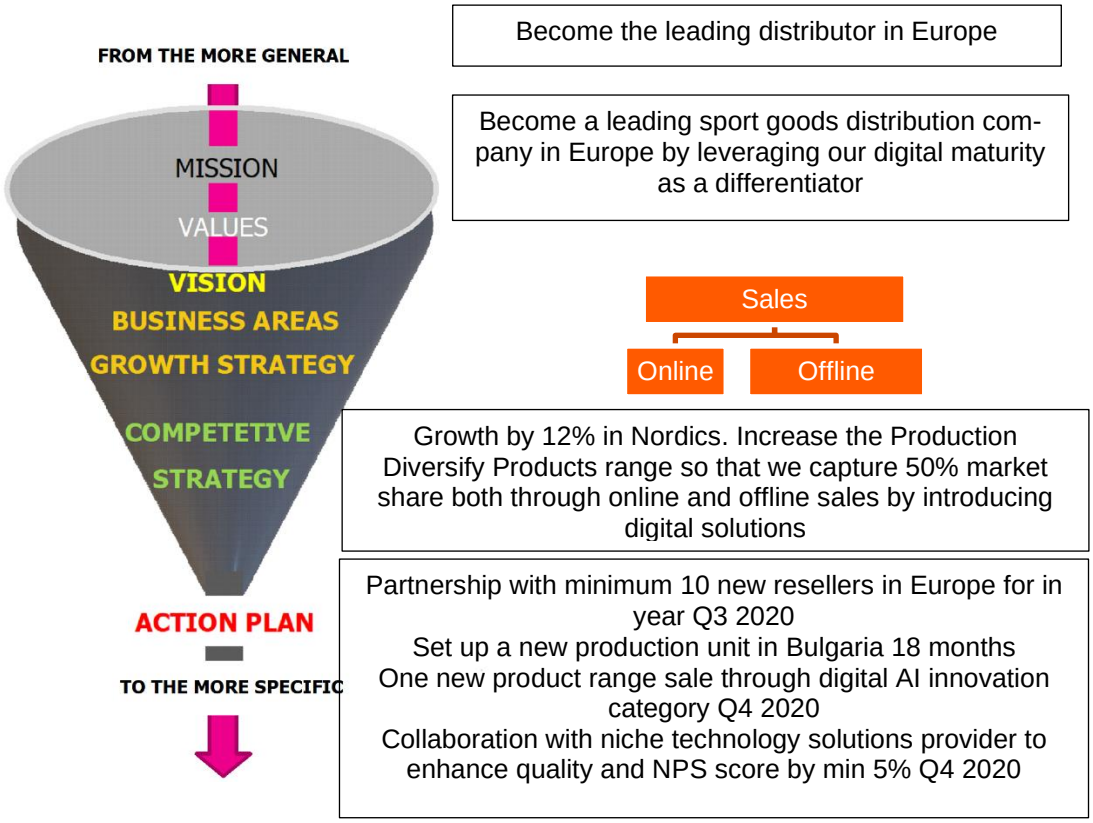


Figure 22. Funnel how an organization can understand and commit to the Strategy.

As shown in Figure 22, the funnel contains the following steps. Note the change in selling approach or presenting it internally. The more generic statement has changed into specific actions.

Step 1: Get the strategic directions through your Vision, Mission and Value statements. E.g. “Become the leading distributor in Europe”. This is at a generic level. It has aspiration but needs further direction. The next block includes bit more clarity. “Becoming a leading Sports goods distributor”. However, there is still no target or specifics yet.

Step 2: Now in step two, you see this is categorized into a business area and depicted to what it transforms to. Here Sales as a business unit is chosen.

Step 3: Growth accompanied through both online and offline sales and it also provides a target to achieve. Here, three important questions, What? Sports goods, Who? Sales (online and offline) and Where? Europe is accounted for.

Step 4: The two decision concerning the volume or the growth strategy is addressed by setting a target to the market share and the way of realizing the growth. (both by diversifying the products and partnerships). So for a team on the ground, it is easier to understand how they can plan this. Here, as the items pass through the funnel, the more generic mission or the vision statement transforms into specific actions.

Next, for an organization to adapt to a positive and transformative culture in the digital age, it should start from the leadership teams. The strategy here clearly defines adopting digital solutions and more specific at least to one AI led solution. This type of support is required in a strategy that not only promotes utilizing full digital transformation solutions but also will keep an eye to measure the results.

The next important factor here is communication. Organizations by giving clarity in the strategic directions will help the team speed up work. The important cross-collaboration will become evident as seen in the Figure. While moving through the Funnel, the Sales organization is required to work closely with IT, Procurement, Infrastructure and Service etc., to decode the crucial facets of the opportunity growth.

Also, such detailed level break-up will help in identifying drawbacks or bottlenecks enabling collaborative zone for resolutions early on. According to the growth strategy, companies adopt different game plans. It also provides an insight towards using own competence to differentiate from the competition to match the customer needs. As analyzed through the Conceptual Framework, this step of fundamentally aligning the organization strategy and corporate culture will act as a backbone for the adoption of AI. This makes the end of Theme 1.

5.5 Theme 2: Digitalization to Scale and Digital Maturity

Based on the suggestions from literature review, if the participating organizations are classified into 4 categories as mentioned by Bersin (2018), which is exploring, doing, becoming and being then these participating organizations fall under either “doing” or “becoming” category. Putting this together with the findings from CSA and inputs from Data 2, the following are fundamentals to embark on digitalization journey and proposed action steps:

1. The company should be able to use digital technologies to build and improve its business processes and models for growth, efficiency and hence companies that still do not integrate digitalization and AI ambition into the strategy, must do so and look for a strategy renewal

2. Its however not just about technology, it is mostly about how the organization thinks and works.

3. It is not pertaining to only one division, for example, considering it as an IT role. It is a shared responsibility across the organization.

As quoted by Kane et al. (2017) about achieving digital maturity, the following are proposed steps for organizations to becoming Digitally mature:

1. Introduce Agile methods in the digital development area
2. Coach and support different streams in the digitalization area
3. Adopt a newer way of working by suitable training and coaching different support models required for such agile development along with effective and efficiency tools
4. Update the existing governance model to adapt to the newer way of working.
5. Induct collaboration practices

Organizations can apply this proposal to improve or initiate their current digital efforts.

Attaining digital maturity is a continuous process. External factors like emerging technologies, changes in consumer trends, business models, competition and many beyond the organization's control will force organizations to change and flourish. (Link this to Theme 1, and such transformation is key to Theme 2 also).

Focussing on the AI adoption, it can be considered in various facets. Figure 23 provides an illustrated overview of putting customer experience alongside retail experience in a brick and mortar store.

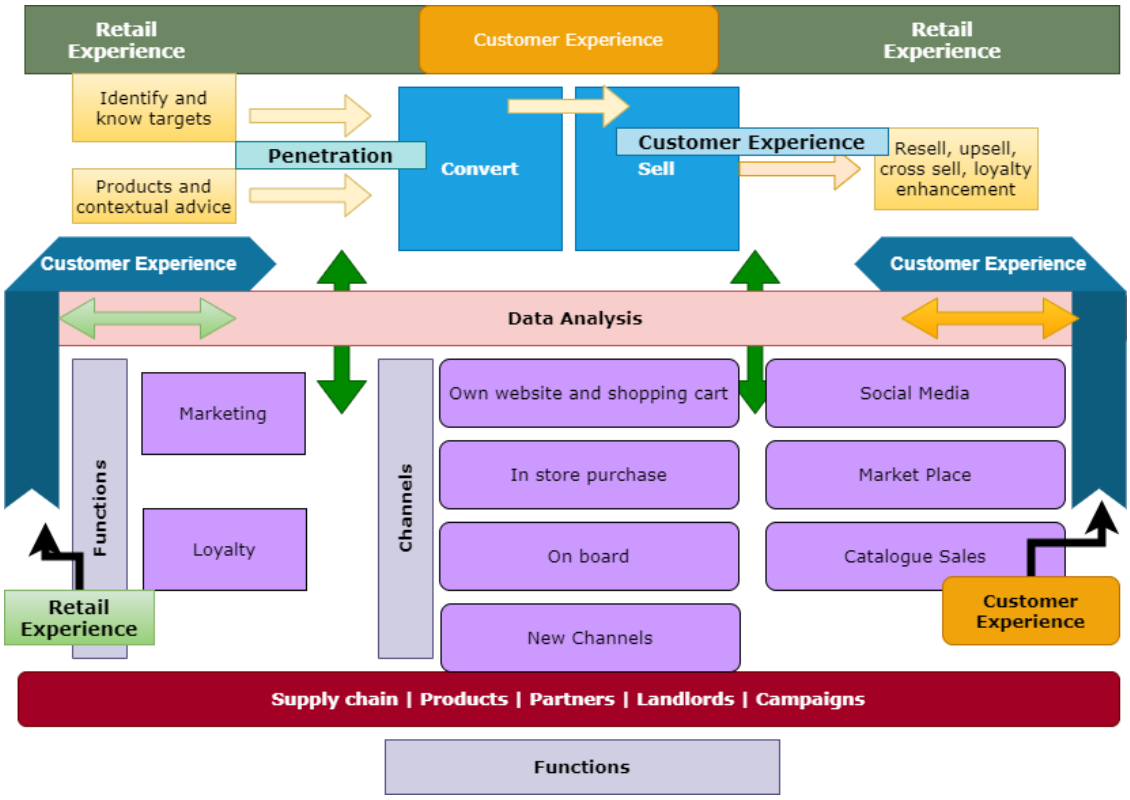


Figure 23. Consumers personalized and informed shopping.

Figure 23 provides a high-level hypothetical scenario on where AI can be adopted in the entire retail chain influenced for consumers personalized and informed shopping as a best-case scenario. Application of AI is shown in green and amber arrows relatively showing the interconnected influence on customer experience and retail experience.

By enabling digitalization across the organization, as seen in Figure 23, all applications can be interconnected with seamless integrations that help in collecting and transmitting data in real-time. The current focus on customer experience can be interconnected with retail experience forcing consumer buying behaviour towards brick and mortar sales.

Some particular ideas that organizations can explore in AI applications include: Smart mirrors, Product scanner, image recognition, cashless checkout, video recognition, Floor surprise and on the day offer, personalized offers, next best offers.

5.6 Theme 3: Building AI Capabilities & Priority Use Case Definition

Building AI capabilities is the most important step to progress in the Digital AI adoption journey. For making this effort simpler for organizations a phased wise capability building based on priority use-case is proposed here.

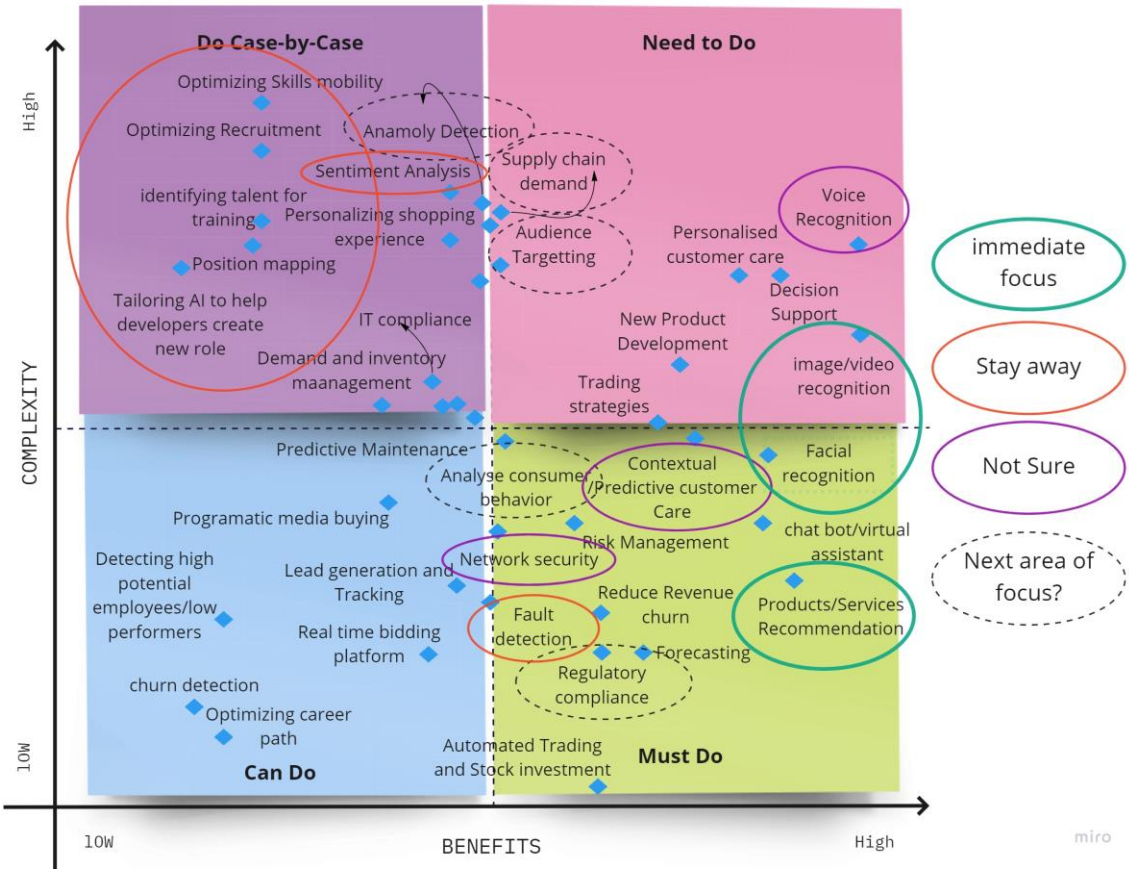


Figure 24. Use case prioritization.

For gradually Building AI capabilities in a phased manner, the participating organizations will need to take the following steps:

A. Identifying and prioritizing the Use Cases for AI

During the current state analysis, various use cases were outlined as the focus is to consider the AI roadmap based on Use case prioritization. As a first step, these use cases were consolidated to identify the priority areas. Based on CSA and further discussing this topic in Data 2, use cases were classified under the following four areas, as shown in Figure 24. These four areas include:

1. Must Do Use Cases
2. Can Do Use Cases
3. Do Case by Case
4. Need to Do Use cases.

This segregation is done in context to use case prioritization and does not define the complexity of implementation. Organizations decided that the use case classified as “Must Do” are those that have a strong business case and easy to embark while “Can do” corresponds to those that the organizations felt there is an opportunity but less plausible. “Do Case by Case” was cautious segregation as adoption to enterprise-wide is bleak but focused on narrow AI or to resolve particular topic. “Need to Do” are those the organizations felt will be important to catch up with the competition.

After a careful evaluation on these different categorized use cases, this proposal recommends the organizations to start with those use cases that are marked inside green circles and slowly can get on to the next set of use cases that are encircled using a black dashed line.

B. Building AI Capabilities: Processes

Figure 25 summarizes these points in a flashcard for an organization to a baseline of digitalizing processes. As shown in Figure 25, the flashcard contains the following steps.

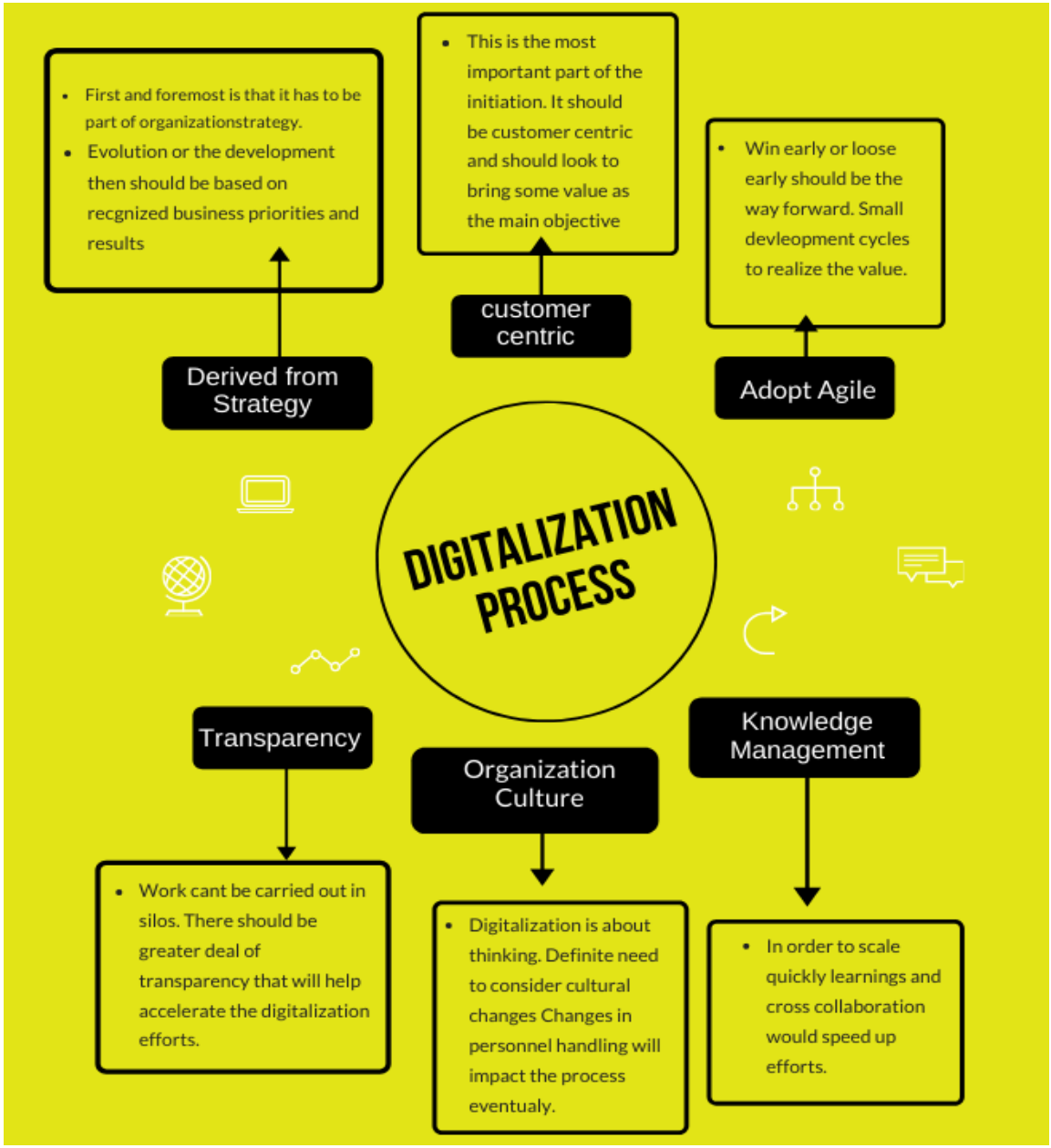


Figure 25. Digitalization process flashcard for reference in an organization.

As shown in Figure 25, the first steps is *the cultural alignment*, as highlighted already as part of Strategy. The corporate culture should be synchronized with the digital environment. Capability maturity goes beyond building staff with required talent, process, skills in new technology. Cultural alignment is the pre-requisite.

Next, moving clockwise, *building transparency* means having alignment in strategy are the other two essentials that should be manifested in regular corporate life. Importantly, this is not a step by step process. Success is possible only if all the areas highlighted in

the flashcard are considered hand-in-hand. Hence, it is depicted as a clock that needs to keep ticking. Also, as already highlighted in CF and here in theme 2, digitalization is not to be done in silos. Having transparency in the organization will promote a culture with innovation and creativity as the core during this transformation. Employees will feel encouraged to contribute and know different initiatives. The vibes will rub on each other enabling the digitalization journey quicker.

Next, *Strategy alignment* will help in setting the priorities right to help build the digitalization process, as no initiatives will be successful until it is part of the key objectives of the organizations as it sets direction and pace for the journey. (Refer to Theme 1, Digital strategy building should be a set priority).

The next two blocks are being *customer-centric* and *adopting to agile* way for working and enabling knowledge management repository. Keeping the focus in digitalization effort on customer benefits will align the organizations in their growth strategy and three is nothing better than the joy of realizing digitalization project success with the reception of a business benefit. The success will not happen overnight. There will be a need to try and test the new concept, way of working or a process. So, it is very vital to adopt an agile way of working and seek business priorities during the implementation for quick outcomes, as there is no point in hanging on to something that the customers do not want.

Finally, as there will be many tracks in digitalizing the process at the organization level, therefore, it is vital to maintain effective *knowledge management* including key learnings, best practices, risk mitigation etc. from one success story, will form a huge value add up for another or a similar initiative. Hence, in conjunction with maintaining transparency, having a knowledge repository that provides information on the different processes followed in the organization should be accessible by all employees.

C. Building AI Capabilities: People

Organizations need to review how the team can be augmented. The implementation of AI will require special skills and deciding what skills are required is the fundamental exercise. Some of the critical roles the digital AI adopter can consider are highlighted in the Table section below.

Table 10. Roles and Responsibilities table.

Roles	Responsibility area
AI Researchers	There are a different set of activities like evaluating problems areas and building knowledge to then apply AI to solve it. This is a typical researcher role who can invest time in reading about the latest trend and technologies, participating in conversations with the similar community, set measurable goals and advance in the research, write newsletter, articles and publish for organization understanding.
Business Leaders	The main role will be to provide a short and enduring vision for strategic research in empirical AI. Will play a major role in developing partnerships
Change Managers	As implementation of AI is a continuous process, Change Managers will be required to define effective change management process and policies, a structured approach to benefit from the application of AI from the current state.
Data scientists	Work, lead and run big data teams and AI initiatives
Data architects	Mainly to architect the solutions that can be scalable and that can meet requirements as it flows
AI specialists	Have familiarity with AI technologies and platform and what it can deliver in terms of business value. Work towards providing exactness and reliable insights.
Domain Specialists	Provides a bridge between business and technology teams. Is more a translator. Helping realize technology advances into tangential business benefits.
Developers	Responsible to develop and provide operational support

It is up to the organization to consider if these roles should be reskilled in the organization or if this should be filled by hiring talent from the market or use external consultants to perform the tasks. The organization, however, has to keep in mind that there is a sense of urgency due to the industry undergoing this change and shortage of such real talent.

This proposal strongly recommends creating a practice referred to as *"Value generation team".* The team should comprise of cross-functional professionals, dedicating the time into the following key areas:

Innovation: Innovation is a must.

1. Focus exclusively on providing innovative solutions that work within the budget, constraints, and resources
2. Should take up a technology-neutral position and enable the organization to provide the optimal solution to its customers
3. Quick turnaround on PoC – Capability demonstration, Business case, Process streamlining

Partnerships

Constantly assess and monitor the world's leading AI solutions including start-up and collaborators

Delivery

Essential to foresee or build capabilities in architecture, data security, insight creation. Industry experience is a value addition. The aim is to discover hidden trends by finding a scalable environment that can provide data in a heterogeneous environment. Adoption of an agile delivery culture. The program suggests here to tailor the delivery model based on business priorities mainly to meet themes highlighted in the proposal (refer Section 6.3.3); iterate first and scale next. The team should be either able to provide guidance applicable according to organization culture or build a team with these capabilities to take up initiatives at a fast pace.

1. Close–to-agile' dev methodology most suitable
2. Recommend soft launch with evangelists/user champions
3. Flexible Schema
4. Data Aggregation & Integration
5. Recommend taking up a PoC driven approach (win early or fail early route).

D. Building AI Capabilities: Tools

Implementation of digital tools always has been recommended as organizations get notices quickly. This proposal takes a careful step towards proposing the use of newer tools for the following reasons:

1. Based on CSA and Data 2 collection, the organization has preferred to proceed using an evolutionary approach. New tools may disrupt or be redundant.
2. It is observed that organizations have limitations on the annual IT spend. Adopting a new tool will attract new investment.
3. Competency and capabilities to work using new tool or technology. Organizations main strength has not been IT. So buying new tools and not using it does not serve a purpose.

This proposal does not indicate to invest into any new tool. The proposal here recommends using pilot tests and PoC approach before considering the implementation of a new tool. (“Value Generation Team” is believed to bring exactly this benefit).

5.7 Summary of the Initial Proposal

The proposal has been built based on a co-creation approach upon analyzing the data set from Data 1 and then collaborating with the key stakeholders from the participating organizations to identify the themes and then define the expectations for initial proposal.

The following assumptions were made for the initial proposal:

- Each of the proposals is based on initial findings. If any inputs including the initial set of documents reviewed changes, recommendations here may change.
- Strategic alignment in business strategy, Upgradation of technology, customer centricity in proposed use cases may be required
- No detailed level requirements were prepared for the individual components.

The organization will accept this proposal as only a baseline version and will further plan and come up with detailed level activity chart as applicable in the organization to enable this.

The journey so far has been to mature from scattered gaps and chaotic ideas as a result of CSA analysis and literature review to conceptualize a unified goal of attaining AI maturity in various levels of the organizations by taking small steps. So, here multiple items derived from CSA were grouped into corresponding themes based on the CF along with findings from Data 2 and presented as the initial proposal.

The evolution of themes from different phases in the research process is depicted in Figures 26, 27 and 28 below.

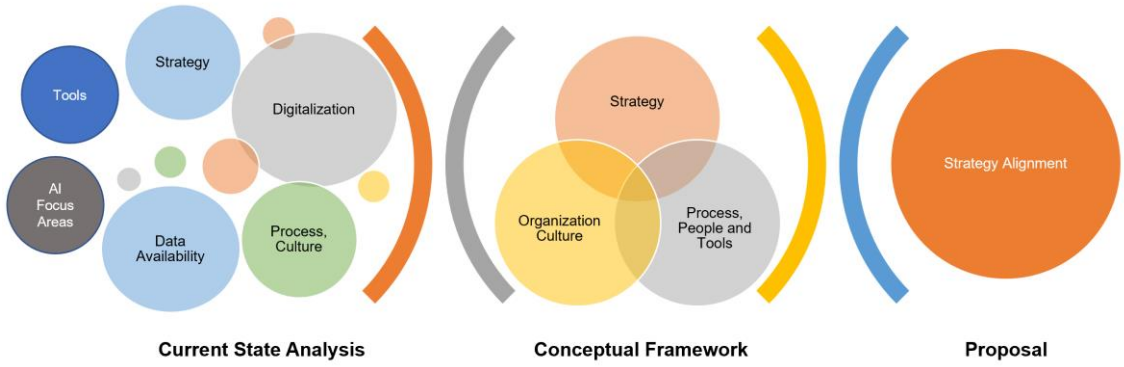


Figure 26. Evolution from CSA findings to Theme 1, Strategy alignment proposal.

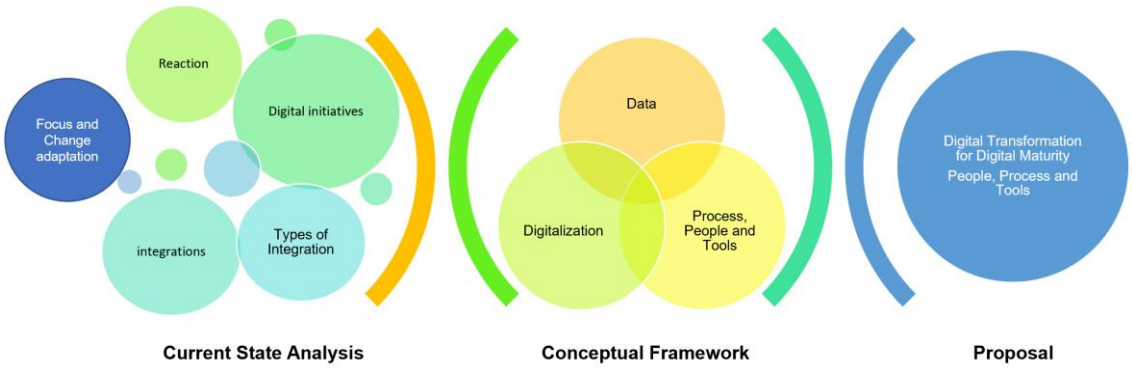


Figure 27. The evolution from CSA findings to Theme 2, Digital transformation proposal.

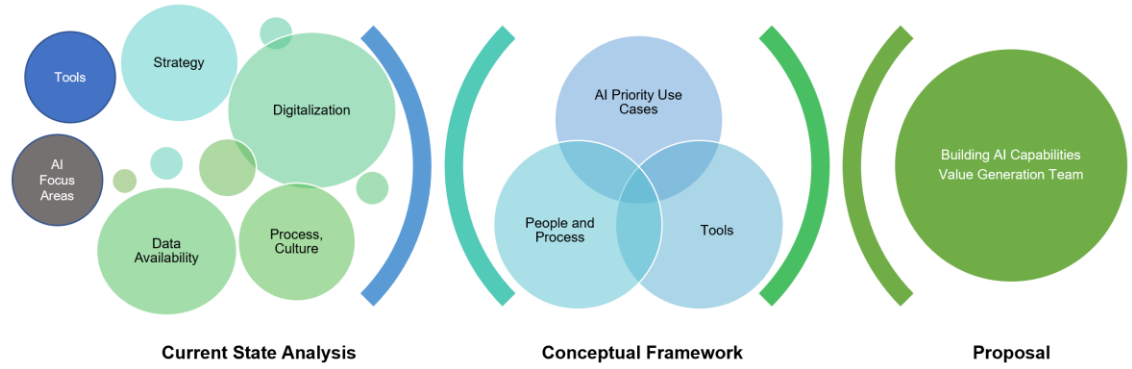
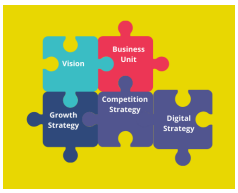
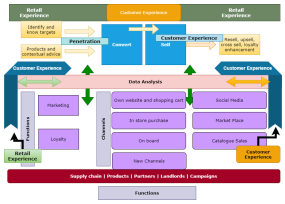


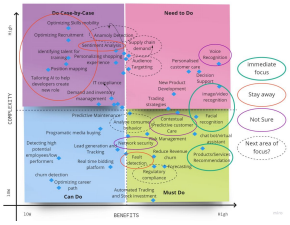
Figure 28. The evolution from CSA findings to Theme 3, Building AI Capabilities proposal.

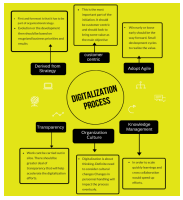
The table below provides the connection to each of these themes with a brief description.

Table 11. Summary of the proposed themes (showing connections to CF).

• **Theme 1**	Strategy Alignment and Organizational Culture
 	Theme 1 emphasized the importance of having good strategic directions and having a corporate culture that promotes modernization and inventiveness. Here it emphasizes the need of activity, consistency and the attitude the leadership team should possess in adopting digital AI that would then easily and widely spread to the entire organization by means of the Strategy renewal template. This is highlighted as the backbone in the conceptual framework.
• Theme 2	Digitalization to Scale and Digital Maturity
 1. The company should be able to use digital technologies to build and improve its business processes and models for growth, efficiency and hence companies that still do not integrate digitalization and AI ambition into the strategy, must do so and look for a strategy renewal 2. Its however not just about technology, it is mostly about how the organization thinks and works. 3. It is not pertaining to only one division, for example, considering it as an IT role. It is a shared responsibility across the organization. • Introduce Agile methods in the digital development area • Coach and support different streams in the digitalization area • Adopt a newer way of working by suitable training and coaching different support models required for such agile development along with effective and efficiency tools • Update the existing governance model to adapt to the newer way of working. • Induct collaboration practices Organizations will apply this proposal to improve or initiate current digital efforts. Attaining digital maturity is an enduring process. External factors like emerging technologies, changes in consumer trends, business models, competition and many beyond the organization's control will force organizations to change and flourish. (Link this to theme 1. Embracing the culture promoting such transformation is key to theme 2 also)	Theme 2 is about digital maturity. Although this proposal did not touch on the Data and infrastructure aspect as requested from the participating organizations, the proposed Retail experience and Customer experience through personalized and informed decisions indicated how critical it is to have different applications interconnected and allow seamless data collection and transmission. In AI adoption learning and leveraging knowledge is the fundamental step and data enables it. Here the arrows depicted shows how learning and applying practically can translate into AI. In addition, developing agile processes, considering digitization across the organization, coaching, having proper governance and collaboration are highlighted. This particular theme is explained as the String, the enabler in the CF

• Theme 3	Building AI Capabilities & Priority Use Case Definition





Roles	Responsibility area
AI Researchers	There are different set of activities like evaluating problems areas and building knowledge to then apply AI to solve it. This is a typical researcher role who can invest time in reading about the latest trend and technologies, participating in conversations with similar community, set measurable goals and advance in the research, write newsletter, articles and publish for organization understanding.
Business Leaders	Main role will be is to provide the short- and enduring vision for a strategic research in empirical AI, will play major role in developing partnerships
Change Managers	As implementation of AI is a continuous process. Change managers will be required to define effective change management process and policies, a structured approach to benefit from application of AI from the current state.
Data scientists	Work, lead and run big data teams and AI initiatives
Data architects	Mainly to architect the solutions that can be scalable and that can meet requirements as it flows
AI specialists	Have familiarity of AI technologies and platform and what it can deliver in terms of business value. Work towards providing answers and reliable insights.
Domain Specialists	Provides a bridge between business and technology teams. Is more a translator. Helping realize technology advances in to tangential business benefits.

Theme 3 highlighted the importance of capability building by choosing use case prioritization method that would help organizations to scale up the maturity gradually and methodically. Organizations can use critical resources based on the priority and also can have ample time to train and coach on the newer process and technology. Processes here touched on 6 main components three of which formed the pre-requisite having an overlap with Strategic alignment and remaining three on competencies that has slight overlap on digital maturity. Definition of value generation team is provided with indicative roles and responsibilities here. This is one of the main enablers and the weapon for AI adoption as per the CF.

These three themes can be identified as per the numbers in Figure 29 in the conceptual Framework.

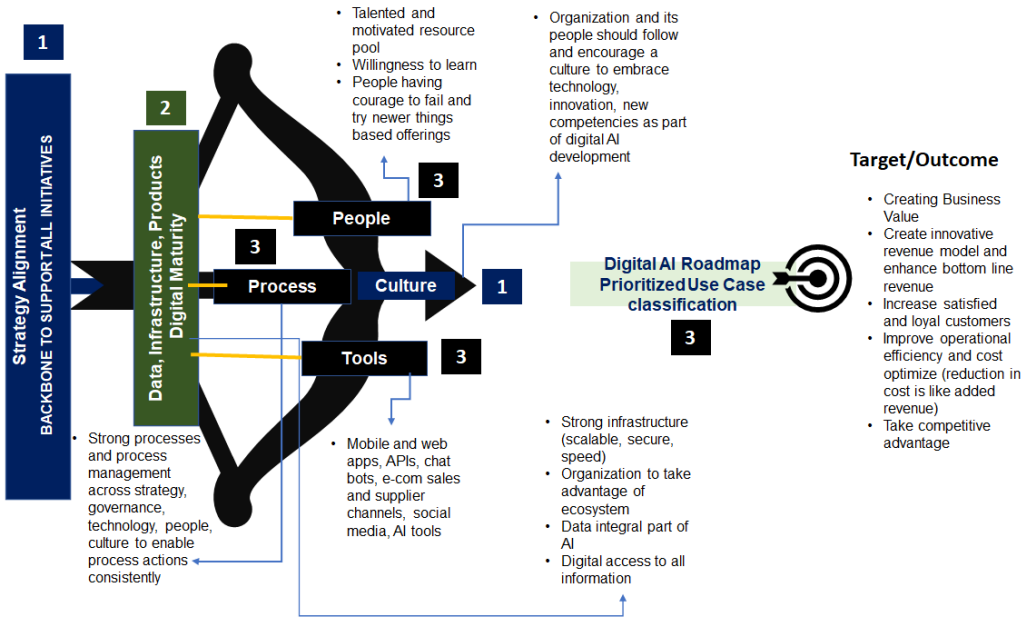


Figure 29. Origins of the purposed Themes 1-3 shown in the Conceptual framework.

The blue block, number 1 constituting *Strategy Alignment and Organization Culture* is Theme 1. The green block with number 2, which is the string the main enabler explained as *Digitalization to scale AI* is theme 2, and it covers digital maturity of the organization. The blocks in black colour numbered 3 constituting *people, process, and tools* along with *the prioritized use case* classification are presented as *AI Capability Building* theme 3 in the last part of the initial proposal.

6 Validation of the Proposal

This section reports on the results of the validation stage and points to further developments to the initial Proposal. At the end of this section, the Final proposal along with recommendations and an action plan is also presented.

6.1 Overview of the Validation Stage

This section reports on the validation results of the proposal developed in Section 5. In this study, validation refers to the key stakeholder evaluation (expert judgement) of the Initial proposal (gathered and analyzed as Data 3).

This process was adopted to comprehend the participating organizations' expectations fully with a draft proposal. It also provides the participating organizations to assess the proposal from their own adoption point of view. First, the stakeholders were invited for a presentation forum where the initial proposal was walked through to know their feedback. Second, the participants were requested to critically evaluate and provide recommendations to the proposal.

All areas discussed during this forum were noted down as feedback to the proposal and considered further to draft the final proposal.

6.2 Developments to the Proposal (based on Data 3)

Data Collection 3 concentrates on identifying improvements/developments proposed by the key stakeholders from the participating organizations to the Initial proposal described in Section 5.3. As shown in Table 11, expert comments were considered to further develop the initial proposal.

Table 12 below provides the key feedback areas considered during the discussion.

Table 12. Expert suggestions (findings of Data 3) for the Initial proposal.

Feedback area	Suggestion from stake-holder from participating organization	Description
Priority use cases	Can a quick win proposal be made? What use cases can I adopt to start with	We can if required detail out the requirements further. But will look through to have at least those business use case that sets us up.
Digital AI maturity	It is very indicative. Can we have a chart to know where we stand and what we should do?	High-level overview to know when we can consider our-selves to be ahead in the mar-ket.
Priority use case AI applica-tion	Is it possible to describe using one example?	Can there be a proposal on where we can apply AI using one of the cases? Just to get an idea.

Data Collection 3 is strictly focused on the Proposal contents and aimed at finalizing and closing the research study based on the feedback.

6.3 Final Proposal

As per the discussion and feedback on the initial proposal, each requirement has been addressed here. Additional items that the final proposal includes are

- Quick win proposal organizations can consider shown as low hanging fruits
- Digital AI Maturity Ladder.
- Application of AI in a customer service use case.

These proposal elements are discussed below.

6.3.1 Theme 4: Quick Win Proposal

Application of AI can be considered in the organization based on the categorization done as per the following main ideas:

- Revenue Maximization
- Customer Experience
- Operational Efficiency and Cost Optimization

As organizations are equipping themselves in the AI adoption journey the launch of a full-fledged consortium may be delayed Hence, as a good start, while the goal is to aim higher and adopt AI at the enterprise level, to build confidence and provide immediate impact especially to the stakeholder, Figure 30 and following section provides a proposal to implement low hanging fruit. (Use case adoption)

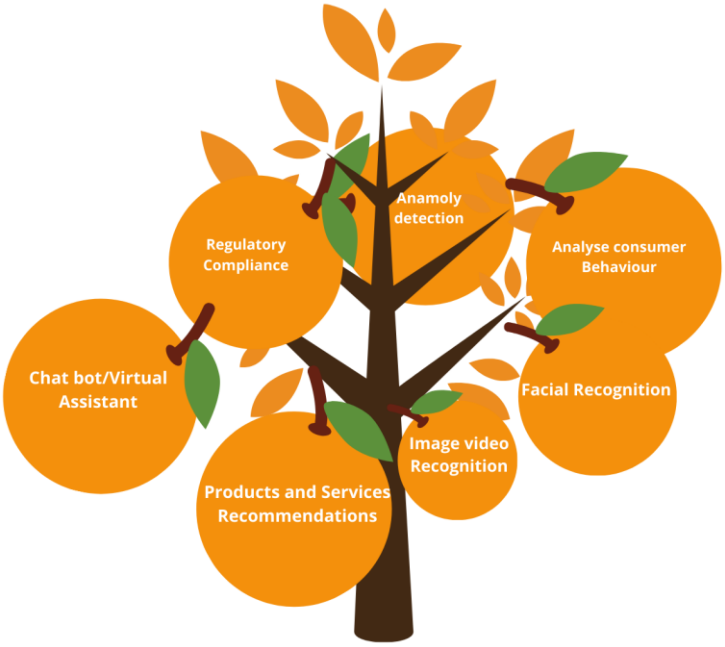


Figure 30. Low hanging fruit for consideration.

These use cases have proven results. E.g. pay by selfie is a well-known trial already with Alibaba and some college restaurants. Chatbots for those who don't have it and virtual assistant for those who have chatbots can be a step ahead. The identified quick wins have low risk in adoption but a focussed scope almost certain in creating a favourable

business outcome. Taking this approach will help organizations that generate some positive results, the executives may be looking for, whilst setting up for full-fledged AI adoption at the organization level. This approach will help the organization to well be positioned at the mid of the AI maturity ladder (Figure 31) and will set up awareness and wide acceptance to take up strategic projects and execute them properly.

Benefits of adapting to this route:

- Quick time-to-market
- Can identify already Core elements of AI Application that are already in place (E.g. infrastructure (& some services) for source data access etc)
- Can start transforming from small or moderate business benefits in quick succession.
- You can define process standards as it evolves and firms up as the journey progress than expecting everything to be set.
- Flexibility can be seen in technical aspects while bringing huge business benefit from applied use cases. E.g. Segmentation or Targeting, Customer intimacy or retention or just higher conversion of offers.

6.3.2 Digital AI Maturity Ladder (extension of Theme 2)

As a part of feedback received from proposal validation process, which is the Data 3 collection stage, a digital AI assessment scale was required that is helpful yet simple for anyone to follow. As organizations can be at varied digital maturity it was important to consider the evolutionary approach finalized during the proposal building stage and come up with a scale that organizations can self-assess in terms of their digital maturity and in adopting AI. Evolutionary means a step by step approach but a growing attitude, so a step ladder became an obvious choice. A ten steps ladder was considered with each step defining upward movement in becoming an AI driven organization. As to make a big jump getting two steps back always helps, a couple of scaffolding steps are provided that can ensure organizations have basic pre-requisites to start the journey. Ladder only describes the AI maturity with an assumption that organizations will maintain balance in People, Tools and Processes including Data. For the avoidance of doubt, drop 2 is considered as the starting point. More on the drops helping organizations to scale in Digital AI ladder is explained in figures below.

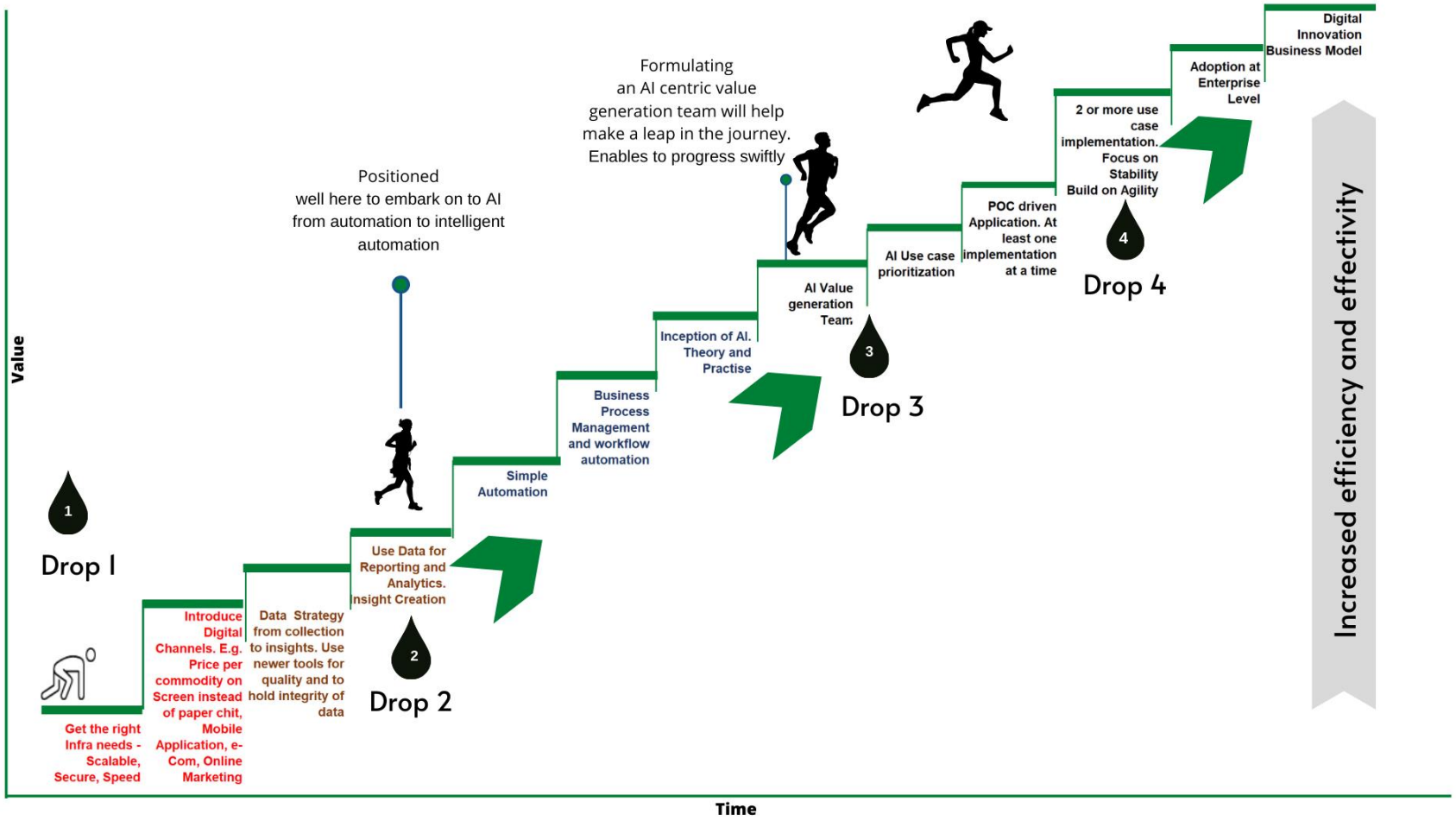


Figure 31. An interpretation of AI Digital maturity ladder that organization should use to check their ambitions.

Figure 31 represents the AI Digital maturity ladder and 4 drops to accelerate AI adoption. It has a ladder drawn against time. The higher you climb better the value is.

Each step has a given position in digital AI maturity. The associated drops are major goals in the adoption journey. As the participating organizations are positioned somewhere in between Drop 2 and Drop 3, recommendations here is pertinent to it.

Organizations using data for reporting and insight creations are positioned well to embark on to AI. The simple next step can be adopting to automation, developing workflow automation that requires human intervention and moving to intelligent applications by setting up an AI value generation team at drop 3. As proposed in the earlier themes, here value generation team can come up with definite use cases and support PoC to slowly embark to bimodal and multimodal AI implementations as the model here strongly recommends adoption of use case prioritization. The effectivity of the value generation team in imbibing the AI trends and driving the AI adoption in the organization becomes key here in making a leap to maturing in the digital AI adoption. Once in drop 4, specifically AI adoption will accelerate the growth as indicated in Figure 32.

Figure 32 below describes what those 4 drops can focus on.

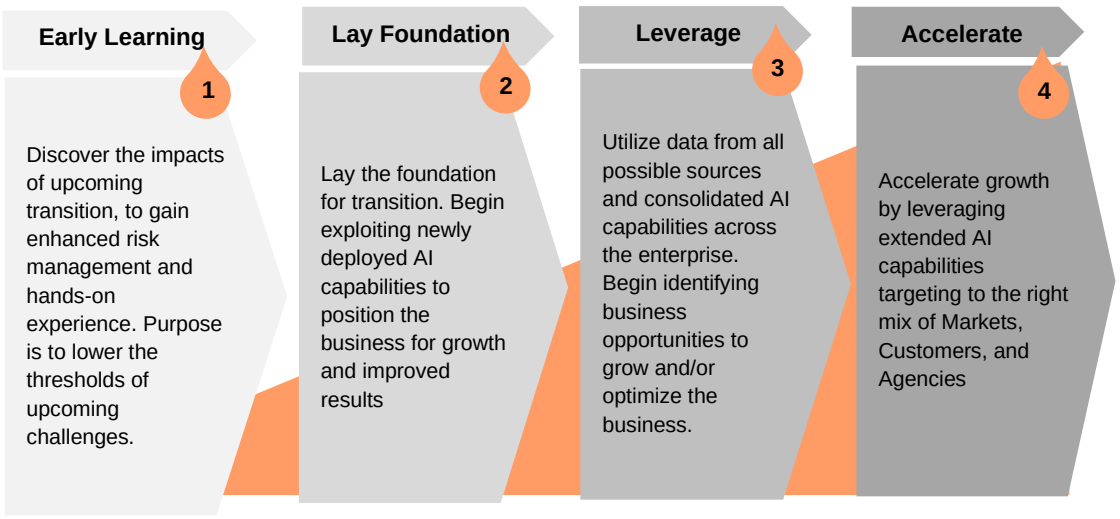


Figure 32. AI digital maturity.

6.3.3 Application of AI in a Customer Service use case (Theme 5)

Figure 33 provides a practical overview of where AI can be applied. It shows a practical illustration of the application of AI in a Customer Service scenario. Three main positions have been identified here.

- Position 1: At the Feedback creation stage
- Position 2: At the Feedback assignment stage
- Position 3: At the Feedback resolution stage.

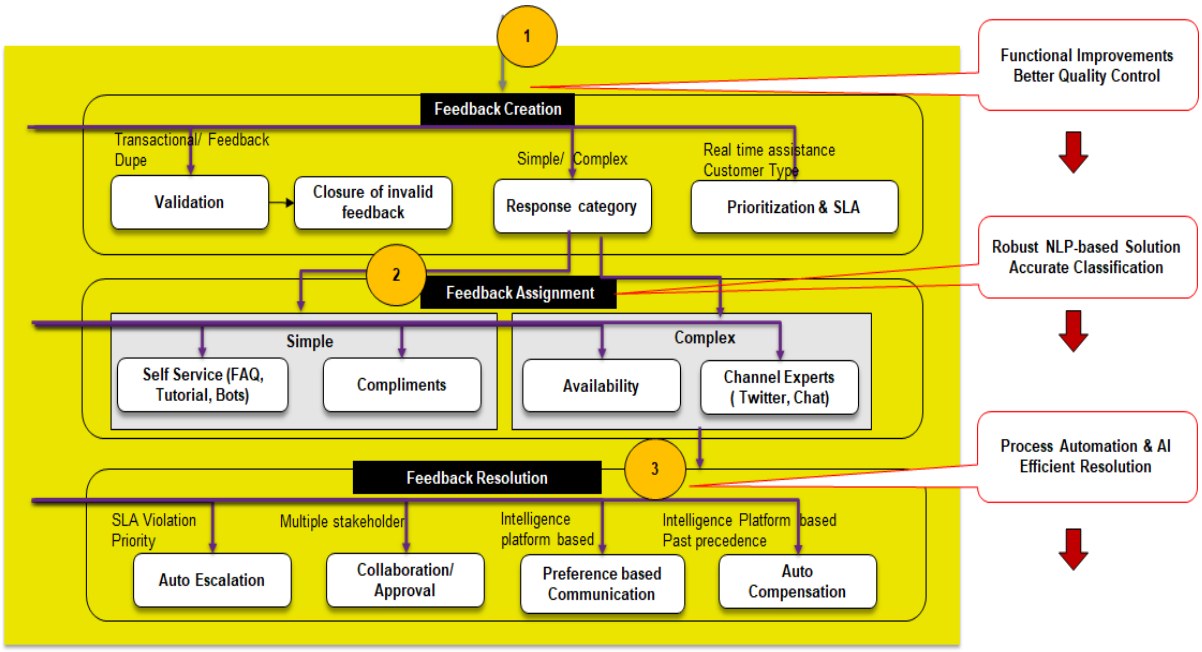


Figure 33. A practical illustration of the application of AI in a Customer Service scenario.

As seen in Figure 33, Position 1 allows AI to be applied for functional improvements or perform quality control. E.g. If a customer is contacting to raise feedback or a complaint through the website, the online form can impose mandatory and optional fields. It can also do simple validation. However, if a customer is required to upload a recent bill or provide an invoice or a receipt number, it is unlikely the validation can be done to detect anomalies. This is a classic example where AI can use the intelligence to verify if the reference information provided is valid in the first place. If yes, to check if there is already an open record dealing the issue etc. So, this not only helps in avoiding duplicate feedback or complaints but in general can help in the efficiency of handling the complaint process.

Similarly, in position 2 AI can be applied to assign the work task based on the desired service level and/or based on the level of support required for resolving feedback or the complaint.

At position 3, AI can be applied for resolving cases by inducing NLP or an assistant for processing automated refunds for confirmed and defective products and so on. The organizations can review at each layer here and certainly can come up with a much more detailed level use case for AI application.

Figure 34 below here provides an illustrated example of how and where Artificial Intelligence can be applied in the business unit.

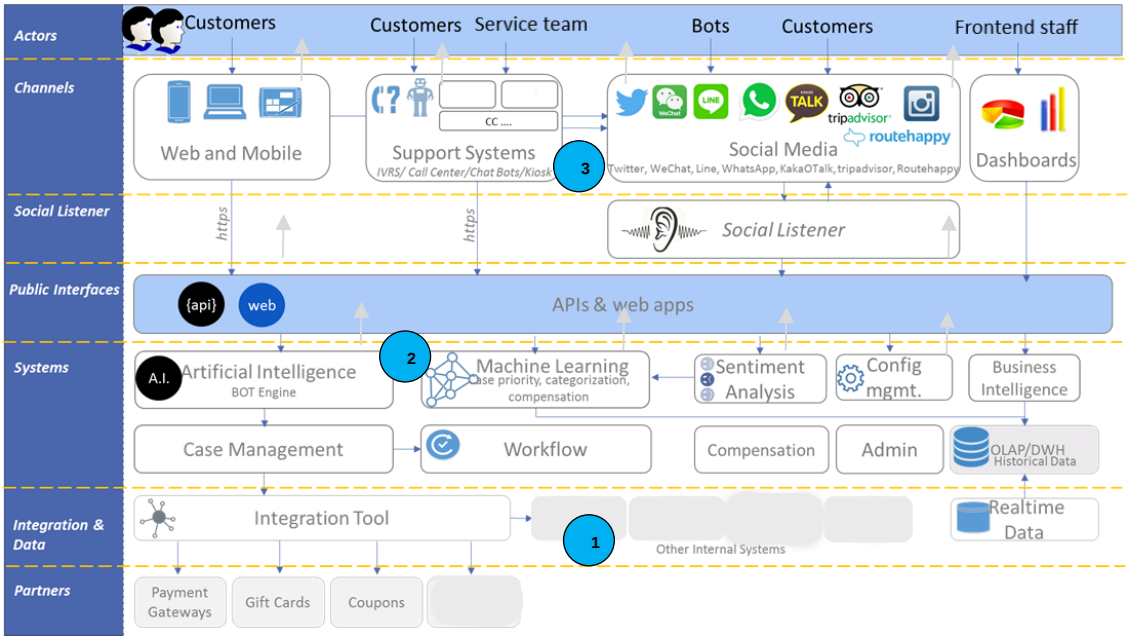


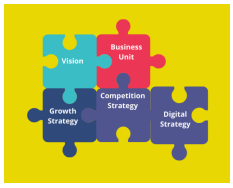
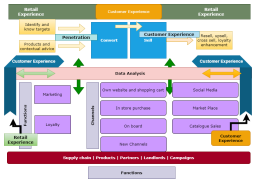
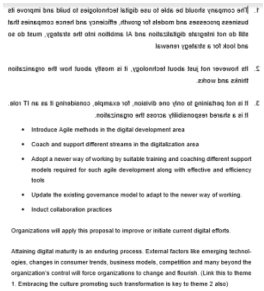
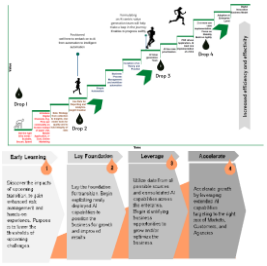
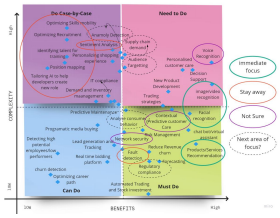
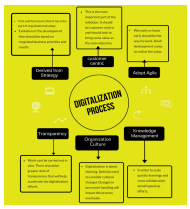
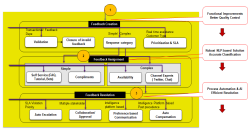
Figure 34. High-level architecture depicting possible AI application in a Customer Service technical landscape.

As seen in Figure 34, the process of applying AI in a Customer Service technical landscape is explained in 3 main steps. The first layer forms the Data or the information layer. On top of this sits the Artificial intelligence and the application program interface that enables interaction with upstream transaction and engagement systems that forms the top layer. Note that each of these is interconnected enabling transparency and visibility across different customer interacting applications with data available from a real-time source. With the data, information and knowledge having to and from movement AI applications can learn and practically operate as per the desired business results.

6.4 Summary of the Final Proposal

The summary of the AI Roadmap is shown in Table 13 below to show connection with CF.

Table 13. A consolidated overview of the AI Roadmap with themes 1-5 (the final proposal).

Theme 1	Strategy alignment and Organization Culture	
		
Theme 2	Digital Maturity and Digital AI Maturity ladder	Extension of Theme 2
		
Theme 3	Building Ai Capabilities using Priority Use Cases	
		
Theme 4	Quick win Proposal in the form of low hanging fruits	
		
Theme 5	A specific example of Application of AI	
		

Themes 1-5 make the proposed AI Roadmap for the participating organizations. Comparing the proposed AI Roadmap (the final proposal) with the conceptual framework, Themes 1, 2 and 3 were formulated in the Initial proposal and remain intact. However, three additional items (marked with stars in Figure 35 below) have evolved. Theme 4, *Low hanging fruits,* and then with Theme 5, specific use cases made the Final proposal comprehensive.

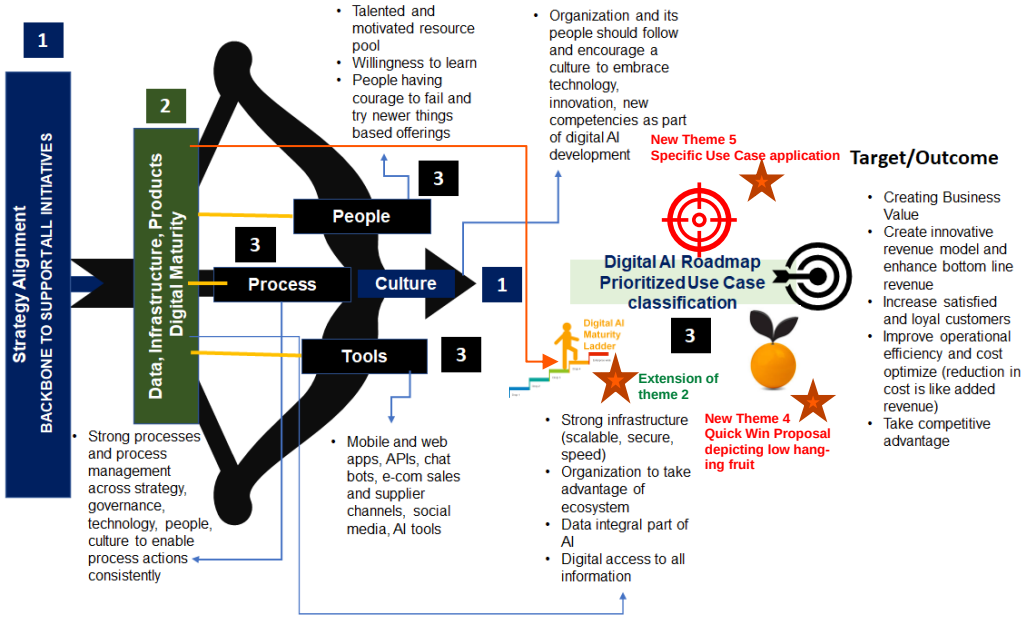


Figure 35. The origins of Themes 1-5 in the Final proposal when compared with CF.

6.5 Recommendations

For implementing this Proposal, the participating organizations are recommended:

- to face reality. *"We actually have been doing this process like this since the beginning"* does not mean that the processes have to be followed in changing times even though there can be better value delivered by adopting a newer process.

- to prioritize the work and run it in such a way that the work can see real progress. So, prioritization and sequencing are suggested. An organization is looking at dividing the time of experienced resources between many priorities resulting in a distributed effort, this is not efficient.

- to truly prioritize the developments based on the values it delivers and its alignment to its overall strategy rather than a unit looking to invest for the availability of investment fund. So, adapting to a systematic project/portfolio/idea management process should be introduced.

- to start small but with an intention of scaling it up. So, with an intent of scalable processes and techniques to manage not just phases of one initiative but a possibility of grouping such similar initiatives into a single management category.

This approach will help to progress swiftly in planned strategic initiatives by emphasizing vital missions.

7 Conclusion

This is the final section of the thesis that encapsulates the essence of this study. It also provides a short section with self-evaluation of the study later.

7.1 Executive Summary

The research and thesis were mainly conducted to define Digital AI roadmap for retail segments keeping in mind industry trends forcing organizations to transform to meet today's demand. It also helped the author's interest of finding the pulse of retail organization in adopting AI which eventually assisted in creating a Go-To-Market strategy for IT service organization enduring to collaborate to provide best in class assistance to drive Digital AI with such Retail organization.

Based on the interviews and available material, it was evident that retail organizations are facing a quandary in applying AI and scaling it up within their enterprise to become mature and stay in contention with the changing business model. With this problem defined well in the beginning, the research was done to build a comprehensive yet easy to adopt Digital AI Roadmap by performing a detailed study with the participating retail organizations to tackle this as a universal issue and use the output as a guiding principle for a retail organization in general. The research study was methodical by adopting a proven Applied Action Research approach and Data collection methods.

The following provides a summary of the steps involved in completing this study with a meaningful output.

First, the main business challenge in the modern digital world of Retail organization was identified. This was done based on the market scan conducted by the author whilst serving an IT Organization in Sales and Business Development capacity. A couple of organizations had already come forward and expressed this as their burning issues but without knowing how to start seeking advisory help. As the thesis output was to address this challenge across the industry and not a particular organization alone, to make this thesis more meaningful, the study was kept broader by inviting interested other retail organizations to participate. Upon identifying the retail organization's need to create a Digital AI Roadmap as the main problem to resolve, activities and output were firmed up.

Second, the thesis explored the identified issue through a methodical and proven research approach. For this study Applied action research approach was used by performing current state analysis as the next step with the data extrapolated from Data 1. Third, the review of available documentation from participating organization and also from the case company was used for preparing the data collection plan. Data collection further had two more check points.

As step four, a desktop study or the literature review was carried out based on the current state analysis output and identified areas to correlate industry best practices. During this step, a conceptual framework was drafted mainly based on the themes derived out of the current state analysis and literature review as a first step to build an initial proposal. With indicative measures from the participating companies, which was Data 2 collection period, the initial proposal was drafted as the fifth step in the process with three main recommendations. One to align Digital maturity as a part of overall strategy and organization culture, then include data and agile way of working for enabling Digital maturity and finally looked at applying artificial intelligence based on defined use cases.

As step five, the presentation was made at the end of this phase to the participating organizations for their review and feedback. Based on the comments that acted as Data 3 collection, the final proposal was revised and submitted to these participating organizations for further actions. The final proposal included all the 3 recommendations termed as 3 themes from the initial proposal, a commensurate extension of theme 2 to include Digital AI maturity ladder, and 2 additional themes that got the target bit closer. Theme 4, low hanging fruits, can help the participating companies refer and act. Theme 5 a case specific AI application recommendation that can reap immediate benefit.

Adoption of the proposed Digital AI roadmap and implementation by the participating organizations will require due diligence and constant monitoring. With Organization's strategy aligned to this direction and suitable leadership intervention, the proposal should help the participating organizations to become successful in the adoption of Digital AI roadmap.

7.2 Thesis Evaluation

This section now provides a transparent evaluation by revisiting the thesis objectives vs the thesis output. Besides, it provides an overview of overall experience laying special emphasis on findings, accomplishment, and resistance is provided at the last section.

7.2.1 Objective and Outcome

The objective was to define a Digital AI roadmap for the participating retail organizations. The outcome of the study met this expectation and also presented a Digital AI maturity ladder. With this, the participating organizations can self-assess and embark on to adopting AI in their organization. It also provided a template that the participating organizations can use to revisit its overall strategy that helps in defining a generic objective into more specific action-driven plan to achieve it. There was also a proposition based on the selected themes for the participating organizations to attain digital maturity that included capability building in talent, process and tools. There was a vast list of use cases identified by the participating organizations as a potential start in this AI adoption journey but later classified and further prioritized that any retail organization can pick and choose for early or fast adoption. For practical purpose, a simple customer service use case scenario is also explained how Ai can become reality serving business and realizing benefits.

The following section provides an evaluation of the thesis based on the criteria defined for the study:

Table 14. Thesis evaluation based on predefined criteria.

Evaluation Criteria	**Reflections on the Study**
Validity	• All references done in the study is from credible sources. For relevance, the latest trends and reports from professional bodies such as Accenture, McKinsey and Deloitte are used.

	• No questions were forcing the respondent to choose a particular answer. All questions here were open-ended. The idea was to use it as a reference and provide enough comfort to primarily get to the details. There were other topics as part of the secondary discussion that was noted down also. So, the respondents felt this to be engaging sessions that gave rise to open and healthy discussions.
Credibility	• A proven and recognized Applied business research method was used for the study. The study also adopted an action research approach with data collection process planned in three steps. The qualitative research methodology was used with some amount of quantitative elements.
	• Interviews and workshops were conducted in a friendly manner. To invoke interest and keep the main focus of the discussion alive, a semi-structured questionnaire was used. Participants belonged to a well qualified professional group having authority in their particular organizations.
	• To maintain consistency across the interviews the author alone anchored the discussions which provided uniform maturity, clarity and comfort for participating organizations
	• Desktop research was conducted keeping reliable sources and for purpose of relevance, those that are recent were referred to assess the findings from a similar study.
	• An honest and transparent review along with personal manifestation is provided by the author for this study.
Dependability	• Data collection was done structurally in 3 steps. Data 1 was in the initial phase to understand the current state. Data 2 helped in proposal building stage and Data 3 to validate the initial proposal and finalize the end deliverables. These were

structured in such a way in addition to the feedback, also data collected were presented and validated.

Transferability

- The list of participating organizations was not chosen arbitrarily. First, the list of all recognized retail organizations was shortlisted from a reputed source. While doing so, the applicability of these retail organizations was checked. The final list of participating organizations included a mix of retail organizations in different sub-areas of the domain making it a comprehensive study.

- Participants belonged to different layers in the organization. As depicted in the enterprise performance management model, the three layers included Leadership team, Managers and specialists. This provided a mix of data collection from a variety of participants.

7.2.2 Self-evaluation and Postface

The topic chosen for this study is very relevant for not just retail organizations but for every other organization too. Organizations have been trying to address this and are at varied steps, sometimes unaware where the next bubble is. So, to tackle such requirements for not just a single organization but the industry as such required meticulous planning and a very structured approach.

Applying proven methodology for the research study and following an Applied action research approach helped in maintaining the momentum and driving the schedule. As there were iterations in this approach, constant monitoring at the academic level and recommendations that came after it was helpful. The data collection method also included a wide audience from the industry to indicate their view supporting the use case prioritization. The Digital AI roadmap was the by-product of extensive discussions held with the business team, IT stakeholders, professionals and desktop studies. I sincerely doubt if there is any model out there today acting as a reference point for organizations to embark on digital AI adoption journey and providing extensive use cases categorized based on the priorities for organizations to pick and choose. The result was productive

with organizations banking on this study and planning next steps. But it had its challenges. Getting the organizations to be on board was the toughest. This required some additional effort and extensive preparations sometimes without results. While it became a bit easier once onboard as organizations realized the value, but deep-dive analysis perhaps left the organizations bit exhausted. Moderating meetings, workshops, presentations weren't new. But the biggest push and learning to me was to become effective and utilize the time and opportunity to maximize the thesis output. Few meetings had to be compressed and the outcome was more focussed to address main gaps and not all gaps. The thesis does not provide any market insight or market dynamics. Neither it is intending to highlight industry attractiveness.

7.3 Closing Words

Retail organizations are grappling with the real challenges in implementing AI as a business strategy by revolving around solving data problems. But it is not a piecemeal approach. Data indeed is an integral part of adopting AI. This thesis has taken an empirical approach to consider all vital components that an organization need to be wary about in adopting and scaling up on AI at an enterprise level. Upon analysing different pain points and aspiration of the organizations, the thesis provides a reference measure in the form of Digital AI maturity ladder by including industry-wide best practices that an organization can compare to assess their maturity and adopt a path that can help scale faster and stay competitive in the market. The thesis also provides useful insights on how organizations can consider strategy renewal effectively, redefine ways of working by renewing working group, processes, products, and tools by laying special emphasis on organization culture.

The thesis is more focussed on what should retail industry do with the opportunity to scale in Digital AI. It does not, however, prescribe any magic dose to achieve this to a particular organization. The recommendation is done based on a sample study. Based on appeal from the participating organization an evolutionary approach is suggested but organizations can only to an extent follow the leaders by doing so and will not be able to disrupt the industry. Organizations already embarked in digitalization initiatives at different levels and willing to adopt the suggested roadmap must assess their digital maturity and elicit requirements that best fits their current position and business. The organization can also take the revolutionary route. Thesis does not touch upon this aspect here.

I would have loved to have a team to work on this and tackle by using also quantitative analysis method to optimize the time and run the data collection in 4 rounds, one additional for preliminary assessment before the commencement of the exercise.

Data is the fundamental element of AI and as advocated by the participating organizations there is no proposal for this. It would have been interesting to touch upon the data requirements and call out loud on how to have quality data available for transmitting to AI.

How would the landscape look if organizations had all the money to invest and wanted to take up a revolutionary approach? Or if an organization is establishing newly, what are the necessary actions? Exactly, this would have been another interesting aspect that I would have loved to analyse and describe.

There are some shortcomings but let us look at the positives. Support from the participating organizations was terrific. Also, it made me realize that the world is small. During desktop-study, help poured in from different corners. The recommended Digital AI maturity ladder has helped the organizations to mark their positions to climb up the ladder.

I have not been a strategist. It was a great experience to take part in such a discussion and empathise the situation. Also allowed me to learn various aspects including the domain, challenges and different ways of working in retail organizations.

It helped me to spend quality time with some great minds and widen my network.

Thesis outcome has not been prescriptive, but if the recommendations in the proposal are carefully considered and organizations embark on to their digital AI adoption, then surely organization will see greater success in adopting and realizing the business potential with efficient and effective outputs.

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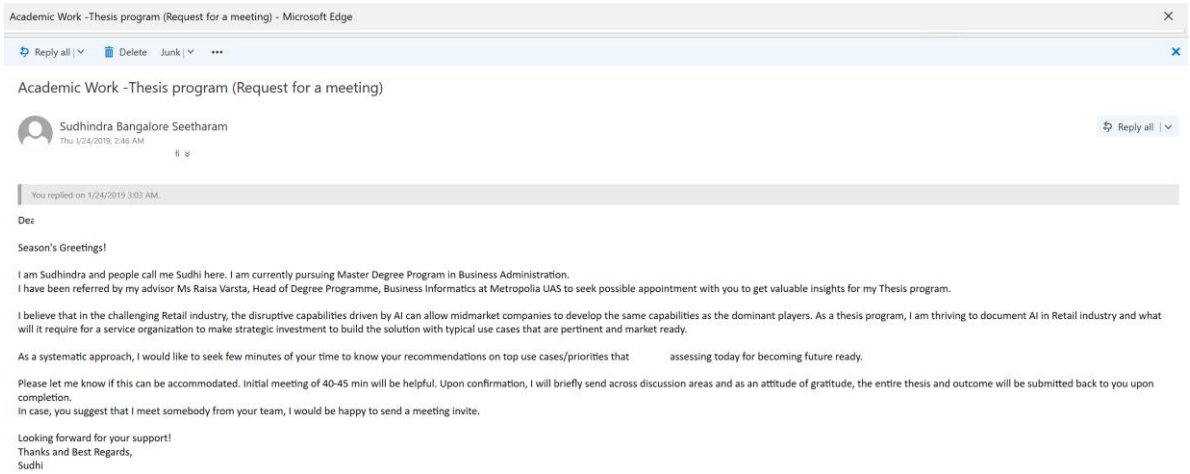
Appendix 1. Data Collection and Validation

Extracts of Data collection and Data validation interactions with participating organizations along with intense desktop study.



Academic Work -Thesis program (Request for a meeting) - Microsoft Edge

Reply all | Delete Junk |

Academic Work -Thesis program (Request for a meeting)

Sudhindra Bangalore Seetharam
Thu 1/24/2019, 2:46 AM

Reply all

You replied on 1/24/2019 3:03 AM.

Dear

Season's Greetings!

I am Sudhindra and people call me Sudhi here. I am currently pursuing Master Degree Program in Business Administration.
I have been referred by my advisor Ms Raisa Varsta, Head of Degree Programme, Business Informatics at Metropolia UAS to seek possible appointment with you to get valuable insights for my Thesis program.

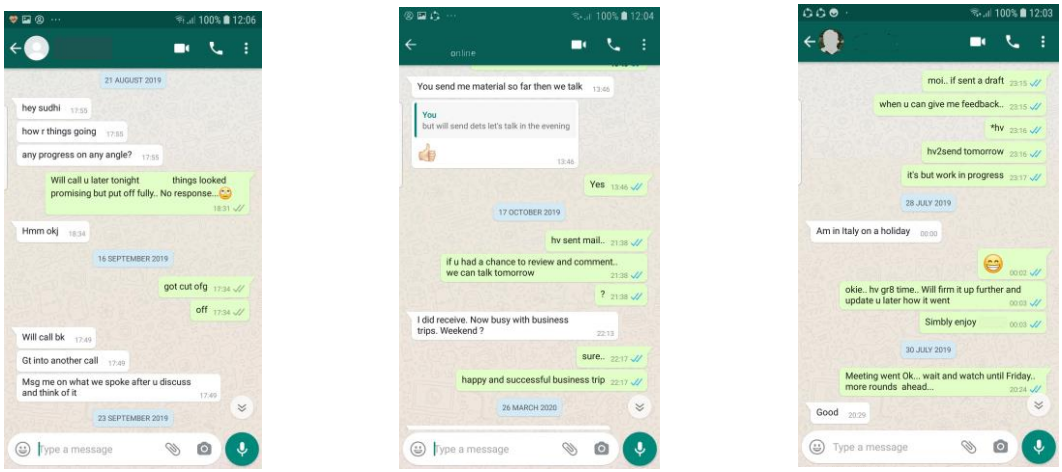
I believe that in the challenging Retail industry, the disruptive capabilities driven by AI can allow midmarket companies to develop the same capabilities as the dominant players. As a thesis program, I am thriving to document AI in Retail industry and what will it require for a service organization to make strategic investment to build the solution with typical use cases that are pertinent and market ready.

As a systematic approach, I would like to seek few minutes of your time to know your recommendations on top use cases/priorities that assessing today for becoming future ready.

Please let me know if this can be accommodated. Initial meeting of 40-45 min will be helpful. Upon confirmation, I will briefly send across discussion areas and as an attitude of gratitude, the entire thesis and outcome will be submitted back to you upon completion.
In case, you suggest that I meet somebody from your team, I would be happy to send a meeting invite.

Looking forward for your support!
Thanks and Best Regards,
Sudhi

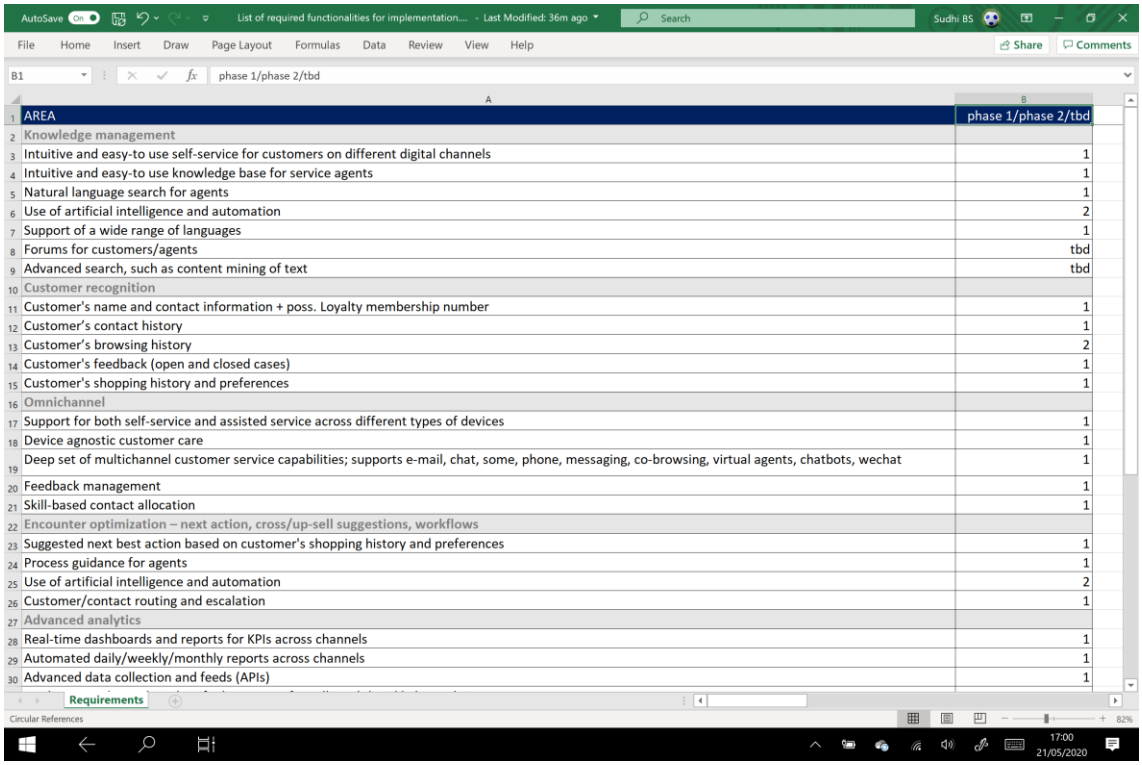
a) Initial conversation to set context and engage with participating retail organization



b) Semi-structured approach with some offline catch up with sponsors and follow up on actions agreed in the meetings

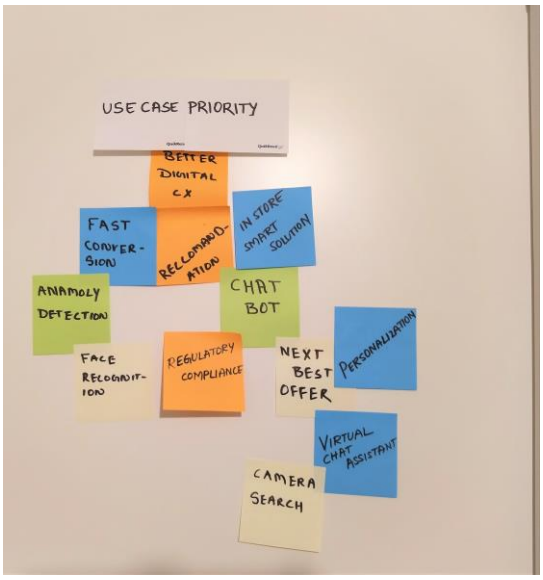
c) Snapshot of desktop research and a face to face workshop with an investor in food retail business in Helsinki.

Appendix 2. Requirements Study



AREA	phase 1/phase 2/tbd
Knowledge management	
Intuitive and easy-to use self-service for customers on different digital channels	1
Intuitive and easy-to use knowledge base for service agents	1
Natural language search for agents	1
Use of artificial intelligence and automation	2
Support of a wide range of languages	1
Forums for customers/agents	tbd
Advanced search, such as content mining of text	tbd
Customer recognition	
Customer's name and contact information + poss. Loyalty membership number	1
Customer's contact history	1
Customer's browsing history	2
Customer's feedback (open and closed cases)	1
Customer's shopping history and preferences	1
Omnichannel	
Support for both self-service and assisted service across different types of devices	1
Device agnostic customer care	1
Deep set of multichannel customer service capabilities; supports e-mail, chat, some, phone, messaging, co-browsing, virtual agents, chatbots, wechat	1
Feedback management	1
Skill-based contact allocation	1
Encounter optimization – next action, cross/up-sell suggestions, workflows	
Suggested next best action based on customer's shopping history and preferences	1
Process guidance for agents	1
Use of artificial intelligence and automation	2
Customer/contact routing and escalation	1
Advanced analytics	
Real-time dashboards and reports for KPIs across channels	1
Automated daily/weekly/monthly reports across channels	1
Advanced data collection and feeds (APIs)	1

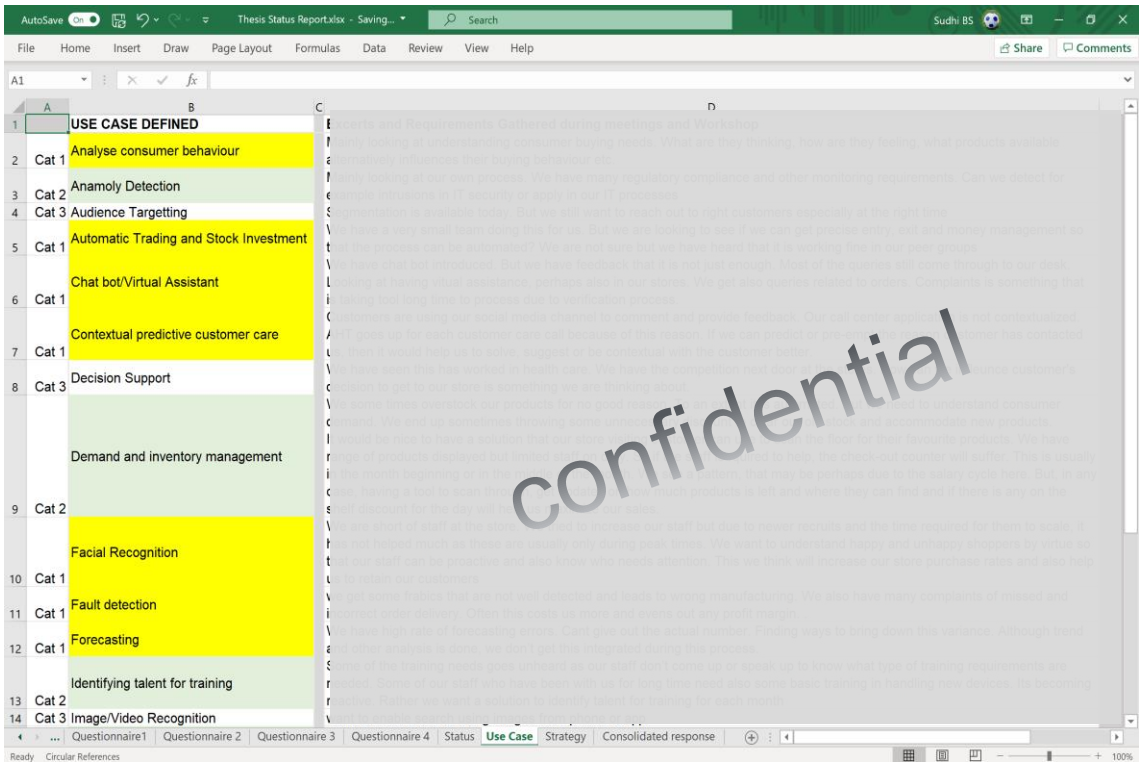
Elicitation of high-level requirements in functional areas for use case prioritization



Workshop outcomes with one of the participating organizations CSA and AI Focus areas

Appendix 3. Definition and classification of Use Cases

Prioritization exercise



		USE CASE DEFINED
2	Cat 1	Analyse consumer behaviour
3	Cat 2	Anamoly Detection
4	Cat 3	Audience Targetting
5	Cat 1	Automatic Trading and Stock Investment
6	Cat 1	Chat bot/Virtual Assistant
7	Cat 1	Contextual predictive customer care
8	Cat 3	Decision Support
9	Cat 2	Demand and inventory management
10	Cat 1	Facial Recognition
11	Cat 1	Fault detection
12	Cat 1	Forecasting
13	Cat 2	Identifying talent for training
14	Cat 3	Image/Video Recognition

Appendix 4. Check point and floor visit

Gate Stage review process upon each milestone done academically with advisors and group forums for review and feedback. Image intentionally blurred.

Shop floor visit of one of the participating organizations that is OK to be published.

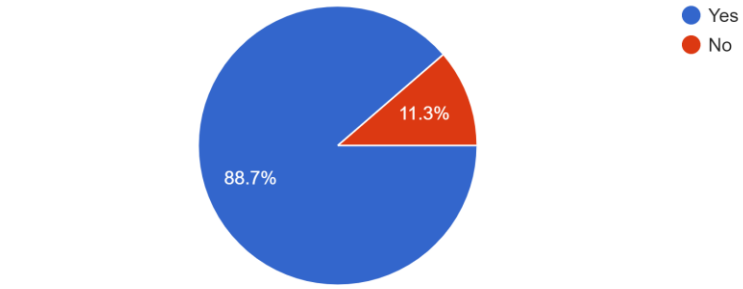
The organization has been looking to have a solution for its store visitors to scan the shelves for their favourite products without actually searching it through. (demand and inventory management case). Floor visit video available in the link below:

https://youtu.be/6W6JQOqBSUY

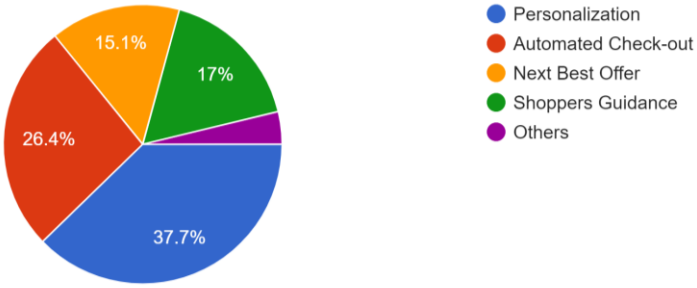
Appendix 5. Independent Survey Results

Survey Results – Perspective indicating Importance of AI from Business professionals working for IT

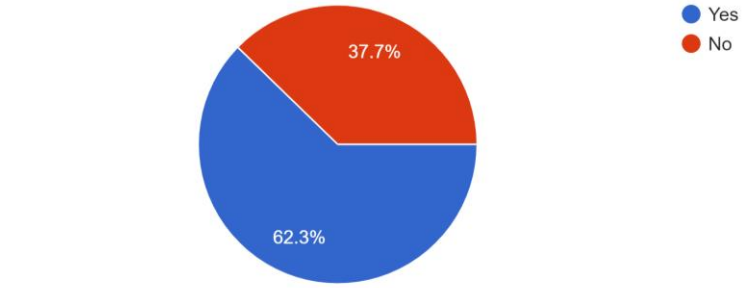
Do you think AI is a digital priority in Retail today?
53 responses



Given that your favourite shop introduces AI, what would you like to see first
53 responses



Would you prefer to have your favourite shop predict your next grocery through personalization and deliver it home?
53 responses



Appendix 6. Weighing the 5 Categories of CSA

The following Table 15 provides an overview of organizations evaluation score. This helps identify shortcomings and also prioritize as per the situation to establish specific goals and further actions to scale up in the AI adoption at an individual level. When read in correlation to Table 7, the average score is compared to the overall assessment.

Table 15. Overall Grading of CSA of participating organizations used for further processing and recommendation

		Strategy	Digital maturity	Data	Culture	Tools
1	Privately held family-owned clothing merchant	4	2.5	2	3	2.5
2	Retail chain selling house-hold goods	3	3	2	2	3
3	Home improvement firm	3	3.5	2	2	2
4	Sporting goods Retailer	2	3	2	2	2
5	Finnish departmental re-tailer	3	2.5	2	3	2
6	New Entrant – Vantaa, Challenger in Oriental, and Asia commodities	2	1.5	1	2	1
7	Finnish online retailer	4	3	2	3	3
8	Oldest Afro-Asia Market, Helsinki, and Vantaa	2	1	0.5	1	0.5
9	Biggest trading sector in Finland	4	3.5	3	3.5	3
10	Challenger and a Discount Store in Finland	3	2.5	2	2.5	2.5
	Average overall score	**3.00**	**2.60**	**1.85**	**2.40**	**2.15**

Appendix 7. Interview Questionnaire Strategy assessment

INTERVIEW GUIDE FOR RETAIL ORGANIZATION

Business Unit:	
Participants Roles:	
Meeting Purpose:	Data 1 Gap 1
Preliminary documents:	
Location and Date	

Introduction: Thank you very much for giving me this opportunity. As you are aware, this meeting is overly critical to structure the rest of the interactions with your team. I have shared the preliminary questions to you already and would like to note down the responses that will be of immense help to assess the organization and subsequently get back with my initial proposal. I have gone through your website and made notes on your vision and mission statements and all that I feel is relevant. Would look forward to validating those answers also with you just to make sure that I have the right information to start this with.
As said, I will make field notes and responses will be anonymous.

Topic: **Strategy and Structure**

1. What do you do? And Why do you do? In other words, can you explain your Vision and Mission
2. What is the overall objective that the organization aims?
3. How often do you renew your Strategy?
4. Are there any tools used or available to review all projects ongoing in the project to link it to your strategy?
5. How does your team develop business cases?
6. Have you prioritized on your initiatives that are really must in your strategy?
7. How do you communicate your main objectives to your internal team?
8. Are they aware why Vision has been defined that way and able to articulate your vision statement well?
9. Has the message been understood consistently across the organization?
10. How often do you access your risk?
11. How often do you measure your Key Performance Index at the organization level?
12. Do you have a team for Strategy management?
13. How do you access the competition, technology trends and market trends?
14. What has been the latest big work done on strategy?
15. Does everyone in the organization know what you don't do?
16. How is the employee contribution towards your main objective evaluated?
17. How is your organization performance managed?
18. Is your company performance objective linked to Roles? Aligned and Actionable?
19. Is digitalization part of your organization strategy?
20. How much do you invest in R&D?
21. What is your annual IT spend?
22. How do you see IT as your business enabler?
23. Does AI-powered future align with the company's overall strategy?

Appendix 8. Interview Questionnaire Digital Maturity + Tool utilization

INTERVIEW GUIDE FOR RETAIL ORGANIZATION

Business Unit:	
Participants Roles:	
Meeting Purpose:	Data 1 Gap 1 and 4 combined
Preliminary documents:	
Location and Date	

Introduction: Thank you very much for giving me this time. As a part of current state analysis, I am interested to know the digital initiatives taken up by the organization. I would ask a few questions that you are already familiar and will make field notes to keep for my records and responses will be anonymous. We will also review the way forward in one of the checkpoints later on. So, you will see what has been done so far in this work at that time and will have an opportunity to review and provide your feedback also.

Topic: **Digital Maturity in Organization and tool utilization.**

1. How is your reaction level for new initiatives and digital projects?
2. Can you provide a few of your digital initiatives undergone in recent past (2 years) and narrate your discipline in executing it with new technologies?
3. How are your integration capabilities?
4. What are the different types of integrations? E.g. Orchestration layer
5. How does your team react to the organization's strategy execution? And the ability to change and adapt to programs meant at an enterprise level?
6. How and what different tools are used?
7. What different technologies are used? E.g. communication
8. How is overall technology architecture?
9. How many applications are considered critical applications?
10. How are these applications in terms of their ability to connect surrounding applications?
11. Is your Organization interested in AI?
12. Why is your Organization interested in AI?
13. Does your organization apply any AI devices?
14. What is your current pain point?
15. Which pain point currently experienced in your business that you think AI might be able to solve?
16. What is blocking you from initiating AI?
17. How will you implement AI?
18. What are the most important priorities for development?
19. What else needs to be considered?
20. How do you measure your KPIs today and expected the process to measure AI implementation?
21. What is blocking organization to adopt AI?
22. Assuming Step 1 is solved, how do you adopt AI?
23. What will be your priority?

Appendix 9. Interview Questionnaire Data Availability

INTERVIEW GUIDE FOR RETAIL ORGANIZATION

Business Unit:	
Participants Roles:	
Meeting Purpose:	Data 1 Gap 3
Preliminary documents:	
Location	

Introduction: Hi, my name is Sudhindra, people call me Sudhi. I am doing a research exercise on defining Digital AI Roadmap for retail organization and you are one of the participating organizations. As a part of the research approach and process of collecting valuable inputs for performing current state analysis, I am hereby moderating this interview to understand your experience in organization activities. As agreed by the leadership team, the answers are used only with your organization and will be kept confidential. As this thesis is based on applied action research and proceeds based on the evidence, for a thesis reporting only the analysis normalized with other participating retail organization would be reported. The findings will be presented at the end of this phase and a request to authorize its use will be requested.
I will make field notes and responses will be anonymous.

Topic: **Data Availability**
Initial question: I like to start by requesting you to share some basic information on different projects and routine activities currently ongoing.

1. Could you please describe a bit more on the projects that you are currently working on?
2. I would like to ask few more questions starting from this fundamental question, do you have data available for use?
3. How good is data quality currently?
4. Is relevant data available for use in Personalization?
5. How does the company utilize its data?
6. Is data handling customer service compliant under privacy and security principles?
7. How is data synchronized across systems?
8. Do you have a single source of truth?
9. Is there a data governance process?
10. How is data handled across multiple business streams?

Appendix 10. Interview Questionnaire Process and Culture

INTERVIEW GUIDE FOR RETAIL ORGANIZATION

Business Unit:	
Participants Roles:	
Meeting Purpose:	Data 1 Gap 4
Preliminary documents:	
Location	

Introduction: Hi, my name is Sudhindra, people call me Sudhi. I am doing a research exercise on defining Digital AI Roadmap for retail organization and you are one of the participating organizations. As a part of the research approach and process of collecting valuable inputs for performing current state analysis, I am hereby moderating this interview to understand your experience in organization activities. As agreed by the leadership team, the answers are used only with your organization and will be kept confidential. As this thesis is based on applied action research and proceeds based on the evidence, for the purpose of a thesis reporting only the analysis normalized with other participating retail organization would be reported. The findings will be presented at the end of this phase and a request to authorize its use will be requested.
I will make field notes and responses will be anonymous.

Topic: **Process and Organization Culture**
Initial question: I like to start by requesting you to share some basic information on yourself. Like how long you have been working with the organization. Any professional experience that is memorable and would like to share.
I do not want to make it just a question and answer. Please feel free to intervene and share any other relevant items along.

1. How are the roles and responsibilities defined and assigned in the current process?
2. Is the process automated for parts where it's applicable?
3. How are different processes followed typically in an IT project?
4. How do you see these processes and are they efficient?
5. Is the process well documented?
6. Have you adopted an agile methodology in development areas?
7. How are process outputs tested?
8. How is communication between project teams and others followed?
9. Are there any metrics used to measure the performance?
10. Have you faced any technical issues in the organization?
11. Do you have performance management programs?
12. How would you see the rewards and recognition program?
13. Who do you work with currently? Are there external participants for the initiative? How do you see their role in enabling this initiative?
14. Do you follow any idea generation process? How do you address if you get a brilliant idea in your area of work?
15. When was the last time organization revived the culture and processes?

Appendix 11 – Reference Questions AI Focus Areas

INTERVIEW GUIDE FOR RETAIL ORGANIZATION

Business Unit:	
Participants Roles:	
Meeting Purpose:	AI focus areas
Preliminary documents:	
Location and Date	

Introduction: We now come to assessing the AI Focus areas and defining the priorities for future. I would like to keep this as an interactive session. We will start with some questions to understand the topic deeper.
As usual, I will make field notes and responses will be anonymous.

Topic: **Digital Maturity in Organization**

1. Is your Organization interested in AI?
2. Why is your Organization interested in AI
3. Have you applied any AI currently to your business applications?
4. What is your current pain point?
5. Which pain point currently experienced in your business that you think AI might be able to solve?
6. What is blocking organization to adopt AI?
7. How will you implement AI?
8. What else need to be considered?
9. How do you measure your KPIs today and expected process to measure AI implementation?
10. Assuming Step 1 is solved, how do you adopt AI?
11. What are the most important priorities for development?