Effect of Artificial Intelligence on End-to-End Customer Centric Business Model

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1. INTRODUCTION

Customer experience is a crucial aspect in organization performance, every touch point for customer influences the customer satisfaction and loyalty either positively or negatively which in turns affect the organizations reputation and income. Organizations powered by intelligent customer service can create a true value and engagement experience for their customers.

Lean company is in a position to reassess its agility and to make the necessary adjustments to achieve speed, flexibility and response. This requires the development of a virtual supply chain which can be reconfigured to meet volatile demand. The fundamental principles of lean are the reduction of waste and the development of a production process that operates on a pull force from the customer (Womack & Jones 2003:24). For Toyota, this approach to manufacturing allowed them to reduce their cost of production and to develop markets both within Japan and internationally.

2. LITERATURE REVIEW

2.1 Intelligent customer experience

According to (Mohannad, Ahmed, 2019, International review of management and marketing), they studied the role of artificial intelligence on enhancing customer experience, the results of their study revealed that there is a positive significant relationship between AI and customer experience, considering customer experience on two dimensions, customer service, to assist customers who are willing to buy and after-sales customer service. They recommended using the personalized customer service which have a great impact on customer experience. They also recommended to employ AI in call centers and after sales support services to shorten the customer waiting time.

The above-mentioned results and recommendations ignored an important dimension in customer experience which is the execution phase, any customer experience with any type of organizations has mainly three dimensions, customer

proposal, execution, and after-sales customer service. Also, this study ignored the application of lean concepts to reduce wastes into business processes, one of these wastes is time, which will result in minimizing customers waiting time at every touch point, applying lean concepts can't be neglected as a corner stone before applying AI.

There is a strong noticed relationship between artificial intelligence, lean and customer experience as managing customer experience efficiently requires enablers characterized by lean concepts and tools, then digitalization will enhance the lean customer experience by transforming traditional tools to smart tools.

According to (Christos G. Chatzopoulos1, Marcel Weber2, September 23-25, 2020, Novi Sad, Serbia), they discussed the creation of a terrific customer's journey through the implementation of lean principles in conjunction with digitalization and in sometimes with Artificial Intelligence, which is defined as "A system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation". They evaluated the synergy between principles of Lean Management and technologies of industry 4. Which enhanced that process improvement can be achieved by the integration of Lean and Digitalization which is proved before the pursuit of Industry 4. They stated that there is a potential synergy between "Customer Experience Management, Lean Customer Experience, Lean Management, Digitalization and AI", then they explained the conditions for successful synergy and the pitfalls and failures conditions as well.

They concluded that digitalization is a tool and Lean Management is a Philosophy with principles and tools, Digitization can enhance tools of Lean Management to design, control and manage a process or a system.

They defined conditions for successful and unsuccessful synergies between Digitization (AI) and Lean, Digitization (AI) and CEM, and Digitization (AI) and Lean CEM.

This research revealed important synergies between important dimensions into the new era of customer centric business model, but it couldn't be noticed the effect of every dimension separately on the customer experience, also there is not any indication related to the customer touch point stage during customer's journey, also there was no any referral to the difference between the application into different sectors including service, goods and projects. It couldn't be noticed also any recommendations about the order of applying those dimensions on any business process, especially those related to customers.

The above articles didn't consider the leadership and management system dimensions, which are the main drivers for any improvement initiatives on any organizational level, without leadership and commitment, teams will never be able to achieve any change of any scale, and without robust management system, organizations will not be able to sustain any achieved improvement over the time which largely results in the loose of different resources already spent in these

improvement initiatives.

2.2 Lean and agility

Lean literature often cites seven wastes to be eliminated. These are muda of manpower, production, inventories, excess processing, defects, waiting, transport, and facilities (Dahlgaard & Dahlgaard-Park 2006:264). Early literature suggested that this could be achieved through JIT, autonomation, a flexible workforce and capitalising on worker suggestions (Monden 1983:2).

Shah and Ward (2003:129) divided lean operational practices into four 'bundles': JIT, TQM, total preventive maintenance (TPM) and human resource management (HRM). Their study was concerned with operational performance relating to lean practices, but JIT has a strong element of supplier management, while TQM is based on the idea that quality is defined by the customer. Some authors are particularly concerned with lean supply networks (e.g. Bortolotti et al. 2016; Lamming 2005) or lean distribution (Reichhart & Holweg 2007); but in their landmark work, The Machine that Changed the World, Womack et al. (1990) emphasised that lean is a supply chain-wide concept, encompassing suppliers and customers.

Agile capabilities Christopher (2000:37) described agility as a business approach that has flexibility as its fundamental principle. This enables a manufacturer to respond rapidly to changes in the volume and variety of goods required by the market.

In order to develop agile capability, a firm needs to develop a supply chain that is focussed on the customer and that exhibits cooperation between stakeholders and effectively deploys people and information to manage uncertainty (van Hoek, Harrison & Christopher 2001:129). These authors developed a framework to assess agility in supply chains. The four key characteristics of an agile supply chain that they identified were customer sensitivity, virtual integration, process integration and network integration. Some key strategies of agile supply chains which are identified by Yusuf et al. (2014:552) are the virtual supply chain, a knowledgeable workforce and enterprise planning systems.

Some essential differences between the lean and agile approaches have been proposed. Christopher (2000:38) described lean as suitable for products with low variety and high volume and defined agility as the ability to respond to changes in volume and variety of demand. Nel and Badenhorst-Weiss (2012:191) contended that firms must make a trade-off between responsiveness (agility) and efficiency (leanness) depending on the nature of their markets. They asserted that lean requires predictable demand and is suitable for a low-cost strategy, while agility is appropriate where high service levels are required by the market. This is consistent with earlier work by Mason-Jones, Naylor and Towill (2000:1064) that identified service level as the market winner for fashion goods with a volatile market and price as the market winner for commodities, which have a steady demand. Thus, the nature of the product determines the appropriate strategy for the firm producing it. Naylor

et al. (1999:109) identified robustness and the need for stable demand as the two key areas where lean and agile differ. They saw these as being in conflict, with a system designed to meet a stable demand (lean) lacking the robust capacity to respond to variations and disturbances in the market (agile). Purvis et al. (2014:100) proposed that the level and type of flexibility required differentiate between lean and agile supply chains.

Despite differences in emphasis between flexibility (agile) and level scheduling (lean), common characteristics of the two approaches may be identified (Naylor et al. 1999:110). Both approaches require process integration and collaboration across the supply chain (Christopher & Towill 2000:208; Womack & Jones 2003:24). The elimination of waste is desirable in agile systems as well as lean, and the rapid reconfiguration required for a quick response to changing markets also increases efficiency for lean production (Naylor et al. 1999:111). Gunasekaran, McGaughey and Wolstencroft (2001:25) preferred to view agility as a management philosophy that uses tools, which may include flexible manufacturing, lean production and computer-integrated manufacturing, in order to achieve the goal of producing both volume and variety. These authors did not see lean and agile as incompatible.

In their analysis of the evolution from mass production through lean to agile manufacturing (AM), Jin-Hai, Anderson and Harrison (2003:178) saw lean as the successor to mass production and the precursor of agile. It must be noted that their understanding of lean was in its narrow sense which involves only the factory floor. Hence, when they introduced the concept of real agile manufacturing (RAM), a differentiating feature was that it crosses organisational boundaries. This is also a fundamental idea of the strategic alliances built in lean (Womack & Jones 2003:277) and hence not a revolutionary idea when moving to AM. Inman et al. (2011:346) took a broader view of lean and investigated the relationship between its key element, JIT and agility. They found that JIT-purchasing supported agility but that JITproduction was not a precursor of agility. However, they did not find that JIT (and by implication, lean) and agile were mutually exclusive. They suggested that in firms which already exhibit manufacturing excellence, greater agility can be achieved principally through further supply chain integration as evidenced by greater levels of JIT-purchasing. This supports the idea that agility exists as an extension beyond lean but is fully compatible with fundamental lean principles. Yusuf et al. (2014:532) went as far as to assert that ‘agility is built on leanness’.

The truly lean organisation in a lean supply chain may therefore already have in place many of the key competencies which position it to move further into an agile paradigm. Alternatively, lean organisations may lack agility because of inflexible operating practices.

Lean thinking has permeated large-scale manufacturing in the developed world and has been successful in developing countries like India, particularly in the large-scale automotive and electronics industries (Panizzolo et al. 2012:771). Similarly, agile ideas have gained traction since the beginning of the 21st century (Naim &

Gosling 2011:342). However, the literature suggests that lean implementation in SMEs has been slower (Hu et al. 2015:981). These authors found that the majority of studies of lean in SMEs took place in developed countries, and of the 28% which were studied in developing countries, the overwhelming majority were of SMEs in India. African SMEs were not featured. Dahlgaard and Dahlgaard-Park (2006:266) noted that the basic principles of lean production are those of craft industries: the focus on delivering value to the customer and pursuing perfection predated the Industrial Revolution and should be achievable in small businesses and in less sophisticated markets. Chong, Chin and Loh (2013) suggested that lean implementation in SMEs is hampered by a focus on short-term benefits; but these authors also suggested that the smaller workforce, less complicated products and simpler organisational structure of SMEs make them ideal candidates for lean. Small- and medium-sized enterprises are well placed to achieve the agile goal of producing small batch sizes or even batch sizes of one provided they are placed within a collaborative network which allows coordination of activities among SMEs and demand information flow (Fornasiero & Zangiacomi 2013:2111).

Despite the challenges associated with implementing lean and agile in SMEs, they will also benefit from reductions in waste and increased responsiveness to changing markets. Fening, Pesakovic and Amaria (2008) investigated the effect of quality management, an important component of lean on SME performance in Ghana. They found that the performance of these businesses was improved in terms of profitability and employee satisfaction. Achanga et al. (2006:467) described the key success factors for the introduction of lean in SMEs as leadership management, financial capabilities, skills and expertise, and organizational culture.

Hu et al. (2015:984) noted that it is important to define the scope when discussing lean, as this may range from changes made only at the operational level to a complete change in philosophy for the entire supply chain. Small- and medium sized enterprises may find themselves lacking the influence needed to bring about supply chain-wide changes. A more limited definition of lean, which focusses on operations management, was found to be the one most often implemented in SMEs. These authors pointed out that the strategic implementation of lean at the SME supply chain level is not well understood. Chung and Chan (2001:601) suggested that SMEs will need to use information technology (IT) to facilitate the development of alliances and networks which will allow them to develop agile strategies.

Despite the limited literature available on agility in SMEs, those that have implemented lean may look to this strategy as a way to increase profitability or simply to remain viable in a volatile marketplace. Two companies at different stages of implementing lean and whose management was contemplating the need for agility were the subject of this study.

Today, every customer needs to get their products on time with good quality. Presently every industry is striving to satisfy their customer requirements and there is a huge competition between organizations into all sectors to deliver services and

products on time with highest quality.

According to (R Siva et al 2017 IOP Conf. Ser.: Mater. Sci. Eng. 197 012064), in this paper the lean implementation is made in service sector for an aviation service sector. An aviation concern trying to accomplish continuous improvement in all its projects. In this project the maintenance service for the customer is analyzed. The maintenance part service is split up into four levels. Out of it, three levels are done in service shops and the fourth level falls under customer's privilege to change the parts in their aircraft engines at their location. By mapping current state VSM and takt time, future state improvement can be done to reduce cycle time using Lean tools such as Poke-Yoke, Jidoka, 5S, Muda. The objectives are to reduce the non-value activities by using proper lean tools. To reduce the cycle time to meet the demand. To reduce the generation cost. To utilize the manpower efficiently. To prepare work standard procedure for the processes. To improve the accuracy of the reporting. To analyze root cause for the errors.

It is concluded and shows cycle time reduction is achieved by incorporating the lean tools in the Aviation industry. The methodology carried out in lean implementation could serve as a guideline for implementing lean concepts. The project carries genuine advantage of focusing on eliminating all kinds of non-value-added activities in the service industry. It focuses the cycle time reduction by eliminating nonvalue- added time through VSM to identify improvement points and 5S, Jidoka, Muda, Visual management, Poka yoke, Cause and effect, work standard procedure to eliminate inefficiencies. The empirical results drawn from the project implementation serve to demonstrate that an operative decision has helped to improve the lean parameters, in particular to reduce the cycle time and increase the value-added time and shows the transformation of a former service organization into a better lean organization that has set a lowest cycle time.

This paper covered technically the application of lean service tools and principles to reduce cycle time then raise the responsiveness of the organization on customers, but this could covers also other customer touch points with the organization and the paper didn't clarify how they are going to maintain the gains achieved through applying lean tools to raise process efficiency and how we will generalize these concepts over the whole organization aiming to enforcing the continual improvement cycle.

Offering After Sales Services enables high revenues through improving customer satisfaction and loyalty. But due to the noticeable increasing competitive pressure in the After Sales Service, a possible solution is the implementation of Lean principles to optimize the customer service-processes. These processes all pursue the target to satisfy the customer's needs and requirements. But due to the variety of these processes and difficult, changeable conditions in customer service (varying workload, required material and tools, changing working environment …), there is no framework concerning the general conditions and objectives of customer service-processes although, this is necessary basis for the implementation of Lean principles.

According to a research paper (TU Braunschweig, Institut für Fabrikbetriebslehre und Unternehmensforschung, Langer Kamp 19, 38106 Braunschweig, Germany), this paper described the development of a methodical approach to identify general conditions, customer service-objectives and to create a holistic process structuration, which should help the Original Equipment Manufacturer's (OEMs) offering customer services to identify and structure these processes. By the use of this methodical approach, OEMs will be enabled to create a structured process landscape. In the future, this process landscape provides an initial point to implement Lean principles, such as Continuous Improvement or Waste Reduction, in customer service.

The paper shows the need of OEMs to standardize and adjust their processes in the field of Customer Service. Therefore, a methodological approach for process identification in Customer Service is presented. This identification and adjustment of Customer Service processes is necessary to generate an initial point for further improvement (Lean Service) of the processes.

For the implementation of Lean in Customer Service it is necessary to implement standardized processes in Customer Services that meet the criteria of the customer as well internal objectives. By means of a concentration on process organization in Customer Service, it is possible to implement principles, methods, and tools of Lean Production Systems to create a Lean Service System and to focus the Customer Service processes on the customer's demand.

But standardized processes can also be supportive for topics like Smart Service / Industry 4.0 in After Sales Service. Without standardized processes (including specified, measurable process inputs and outputs) these fields of research cannot be transferred to and implemented in After Sales Service.

This paper strongly recommends the process standardization according to the internal criteria settled by the organization itself plus the customer's needs and expectations plus the internal and external objectives. As standardizing the customer service process based on these criteria is considered the basis for any improvement including applying Lean service principles. This is matching the process improvement steps listed into ISO 9001:2015 in addition to Juran trilogy.

Setting the internal and external customer service objectives was very important to measure. Monitor and verify the customer service performance and also verify the achievement of customer requirements, but it was essential to relate those objectives to personnel's KPI's to show the leadership commitment. This paper covered only the after-sales service, for only OEM's but same results are applicable on all customer interface stages and on all types of organizations.

2.3 Digital transformation and customer centricity

According to a research paper and all references grouped by related topics there is value added with AI impact on business and how it linked with customer experience specially within an organization believes in that CX need special focus on how we can manage the CX integrated with lean methodologies in a collaboration

model to take the best value by utilizes the AI application within lean CEM as a new accelerated concept after Industry 4.0 and Digitization affect.

I do agree with the researcher's conclusion as general concept and we need to work and invest in new technologies in order to leverage CX in agile way and we have to link between all of those and in same time respect the financial capabilities for the organization in order to choose the best application and how to be customized per each industry from design, infrastructure, data collection tools, implementation and control over E2E customer centric process

I see we should consider the impact of people mindset impact on this concept as digitization isn't only about new prosses based on new innovative solution as technology alone doesn't translate to digital wit. I believe we have to integrate between three pillars 1- Technology, 2- Customer centric mindset,3- process governance, as main strategy to work on E2E CEM by creating practical mechanism with proper agile control tools in order to strengthen and augment new business model.

"AI & Total Customer Experience" Lean CEM is mentioned by practitioners with a non-standard way as the Internet research shows. More practitioners' than academics' references were found, but still not enough to be statistically significant, due to the small number of references,

2.4 Process improvement and customer-focused performance

Lean is broadly classified under the umbrella of process improvement and world class operations, which also include other approaches like business process re-engineering and the theory of constraints (Shah, Chandrasekaran, & Linderman, 2008). This study shows that Lean directly impact process improvement performance (H1) and customer-focused performance (H2), which concurs with the findings of Mackelprang and Nair (2010).

However, this study also shows that these relationships are moderated by the perceived organisational context. The impact of Lean on process improvement performance is enhanced in a context in which standardisation is perceived to be important (H4a). This research also shows that the impact of Lean on customer-focused performance is enhanced in a context where customer effectiveness is considered to be important (H5a)

Lean services: a systematic review

The Lean service literature has been viewed on two dimensions, namely time and content. From the Time perspective, authors have studied the evolution of research on Lean in services; and have classified it into four eras similar to the stages of adoption of any new methodology. These are pre-era, awareness, exploration and finally adoption or implementation of Lean.

The paper reviewed the evolution of published research on Lean Management in Services, to comprehend what Lean is in services, to classify the studies and suggest gaps for scholars and practitioners to carry out future research. The significant conclusions derived out of the study are Lean in services is different from

that in manufacturing because of the inherent characteristics of services. Although the thinking or philosophy behind Lean principles remains unchanged from manufacturing to services, Lean tools and practices need to be tailored for the service industry.

3. RESEARCH GAP

Ignoring the application of lean concepts to reduce wastes into business processes, one of these wastes is time, which will result in minimizing customers waiting time at every touch point, applying lean concepts can't be neglected as a corner stone before applying AI.

4. METHODOLOGY

4.1 Aim of the study

This study aims to assessing the effect of applying lean tools before artificial intelligence on the performance of customer related business processes

4.2 Objectives

This study has 3 main objectives:

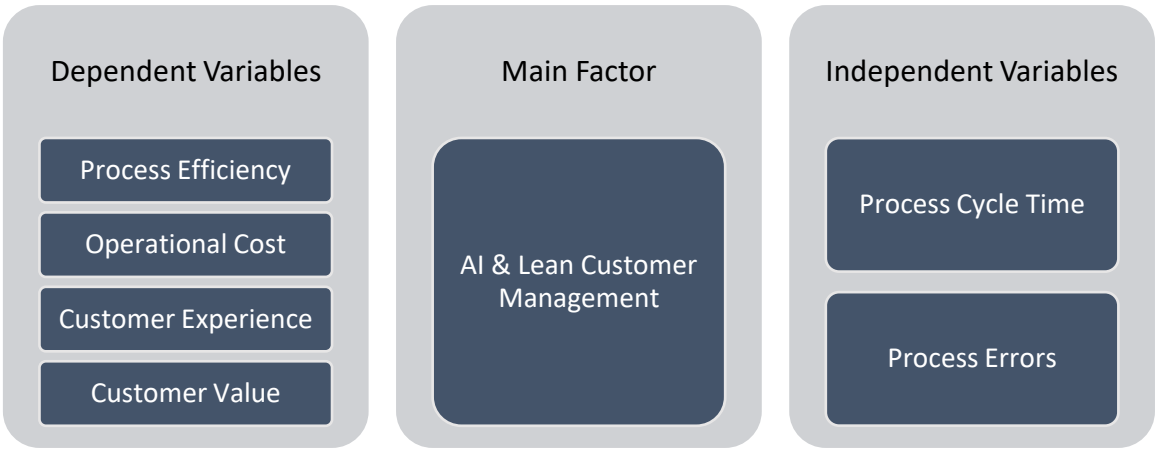
- Find out the relationship between applying lean tools on customer related processes and customer satisfaction
- Find out the relationship between customer-related processes efficiency and customer value
- Discuss how to improve Integration between Leen tools and Artificial Intelligence applications

4.3 Research Questions

- What is the specific effect of applying Leen tools on customer satisfaction?
- What is the specific effect of applying Leen tools on process efficiency?
- What is the specific effect of applying Leen tools on customer value?

4.4 Research Model

The following graph summarizes the relationship between the independent and dependent variables



4.5 Research Hypothesis

H0	There is a significant impact of applying Lean tools on customer satisfaction
H0.1	It is necessary to apply lean tools before applying artificial intelligence and technology tools
H0.2	Not less than 90% of customer requests could be managed through the digital customer experience platform

4.6 Sampling

Study will be on our community targeting population from all business sectors, including agriculture, electrical panels, training, telecommunication, food industry, cement industry, hospitals, cables industry and students. Sample will be taken from different industries and business sectors and will cover all staff levels, sample size will not be less than 30 employee, $n \geq 30$ employee.

4.7 Data collection

A questionnaire is designed and used for data collection after reviewing the relevant literature. The aim of the study was explained to all participants. Data collected in questionnaires then extracted and summarized into an excel sheet to be analyzed statistically using SPSS. The designed questionnaire consists of 25 questions covering the demographic characteristics of respondents, their work fields, their level of professional experience, their knowledge and awareness about different aspects of lean and digital transformation topics, in addition to their believes about the effect of lean and digitalization on the customer experience journey through the organization.

5. ANALYSIS AND RESULTS

5.1 Questionnaire reliability

SPSS program used for the analysis of the collected data. First, we will test the internal consistency between the questions included into the questionnaire to ensure the consistent understanding between respondents. The number of respondents is 40, so sample size =N=40. Below is the results from SPSS:

Reliability

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[DataSet1] C:\Users\USER\Desktop\SPSS Analysis\First Analysis.sav
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Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	40	100.0
	Excluded[a]	0	.0
	Total	40	100.0

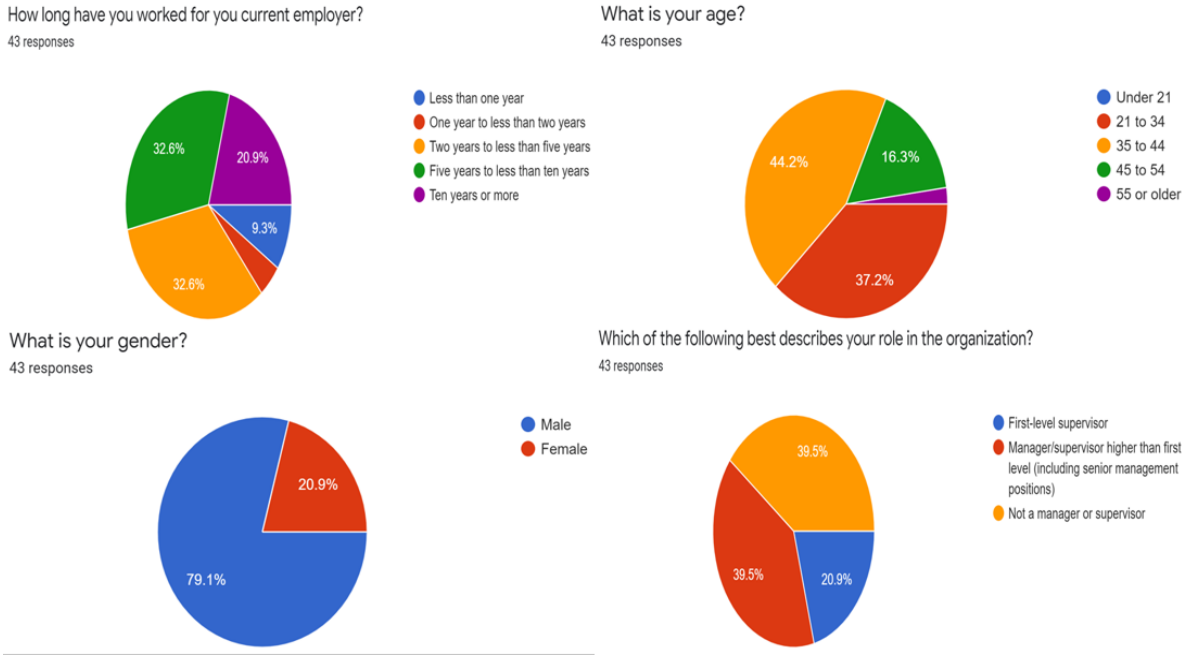
a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

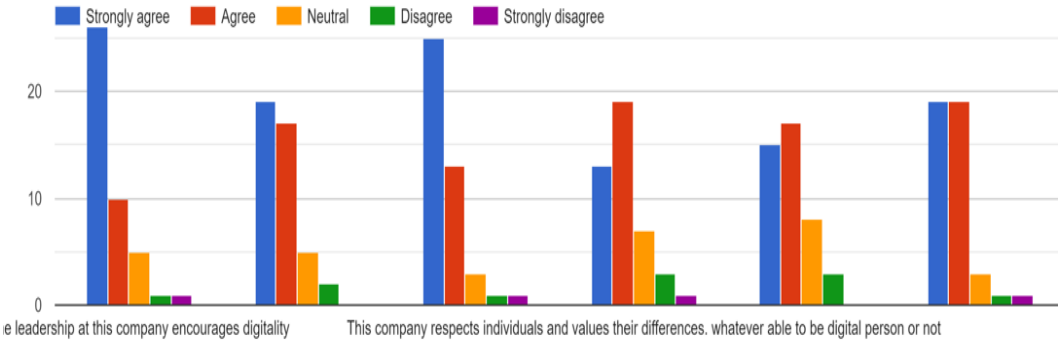
Cronbach's Alpha	N of Items
.873	6

Then the data collected are reliable, consistent, and valid to be used for the analysis to support our research.

5.2 General analytics

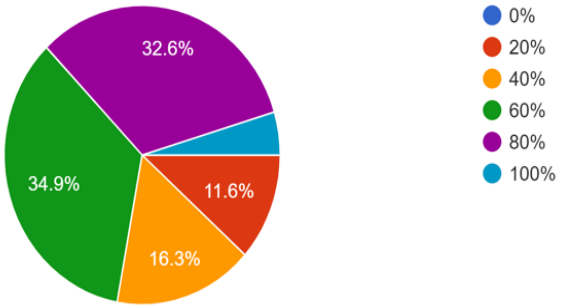


Overall Digital Maturity, AI effect and lean Culture



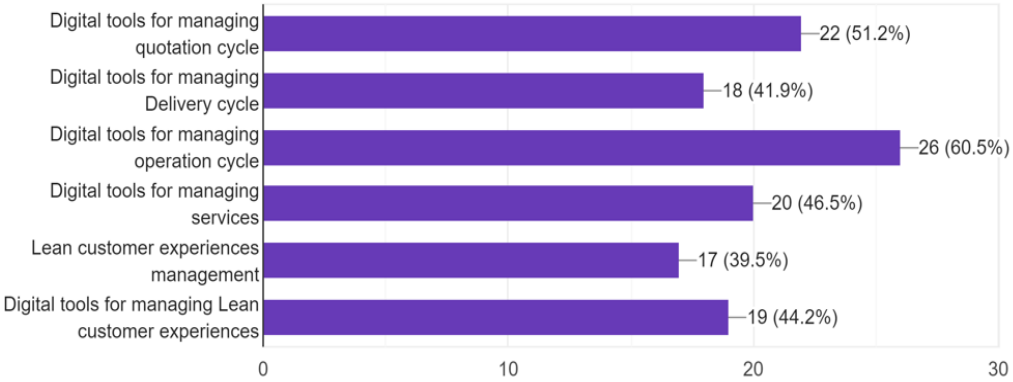
What percentage of your customers' requests do you think can be done remotely with the support of different digital capabilities?

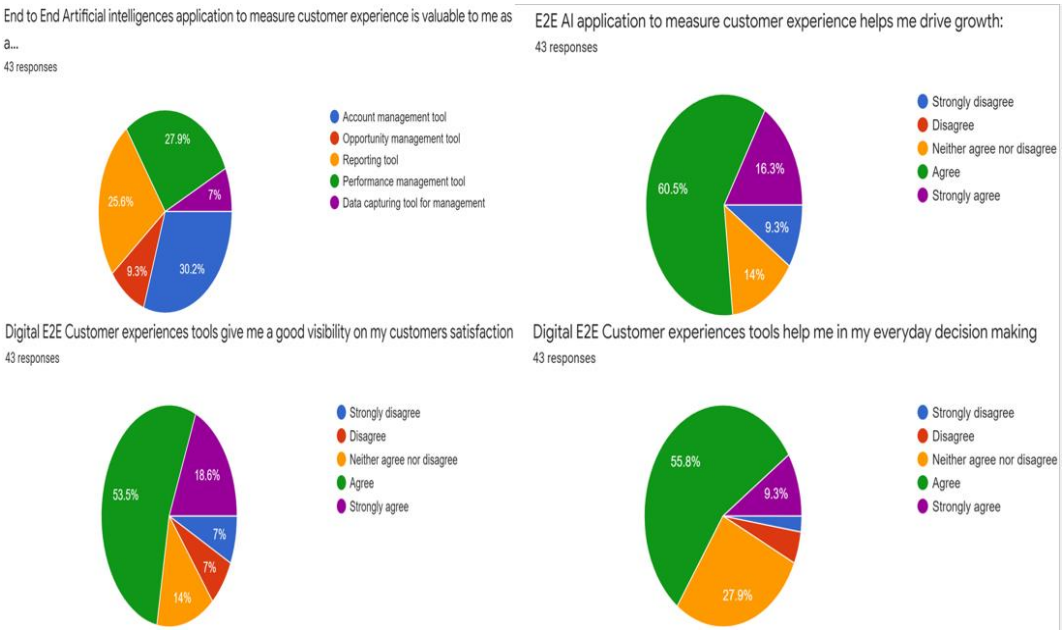
43 responses

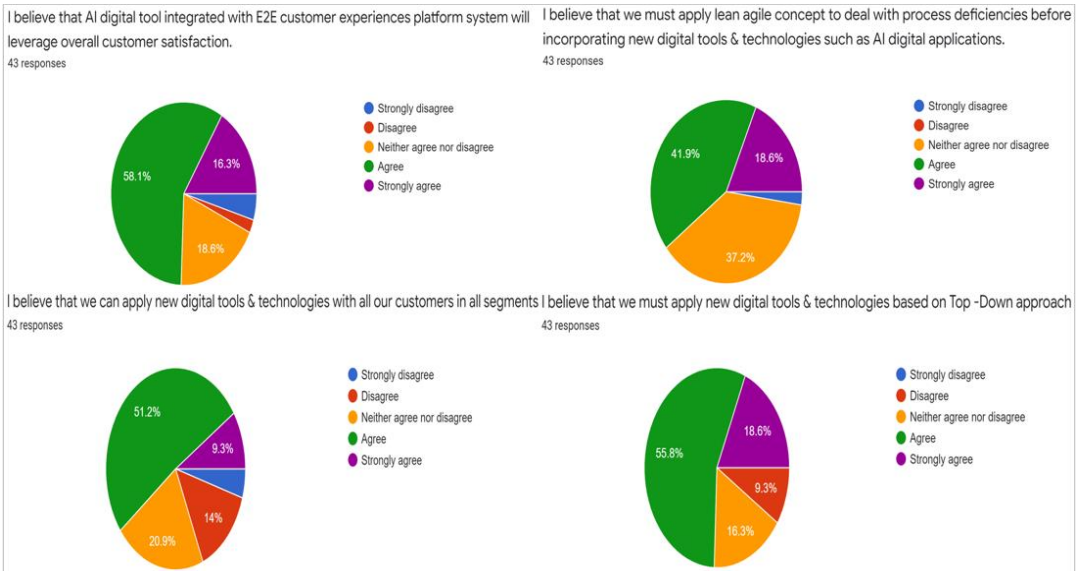


In which area(s) do YOU need to develop more knowledge and/or skills?

43 responses







5.3 Correlation

The correlation between variables related to the initial hypothesis is tested by using Pearson correlation and below are the noticed significant positive and direct correlations either moderate or strong correlation that could be generalized on the whole population:

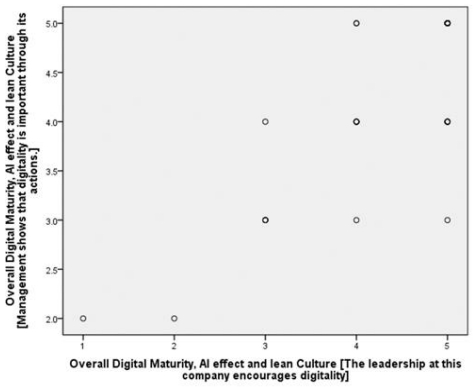
Correlations

[DataSet1] E:\DBA\Term-2\Operations\Rham Research\Final\DONE\Questionnaire_SPSS-NON-PARAMETRIC TEST.sav

Correlations

		Overall Digital Maturity, AI effect and lean Culture [The leadership at this company encourages digitality]	Overall Digital Maturity, AI effect and lean Culture [Management shows that digitality is important through its actions.]
Overall Digital Maturity, AI effect and lean Culture [The leadership at this company encourages digitality]	Pearson Correlation	1	.771**
	Sig. (2-tailed)		.000
	N	40	40
Overall Digital Maturity, AI effect and lean Culture [Management shows that digitality is important through its actions.]	Pearson Correlation	.771**	1
	Sig. (2-tailed)	.000	
	N	40	40

**. Correlation is significant at the 0.01 level (2-tailed).



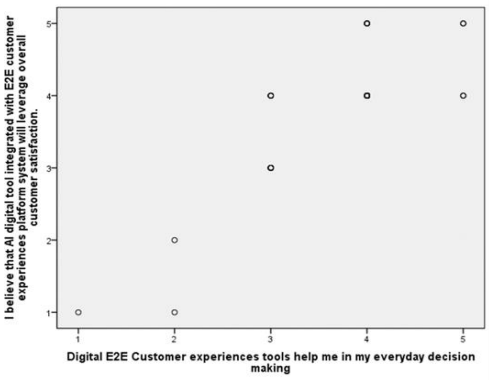
Correlations

[DataSet1] E:\DBA\Term-2\Operations\Rham Research\Final\DONE\Questionnaire_SPSS-NON-PARAMETRIC TEST.sav

Correlations

		Digital E2E Customer experiences tools help me in my everyday decision making	I believe that AI digital tool integrated with E2E customer experiences platform system will leverage overall customer satisfaction.
Digital E2E Customer experiences tools help me in my everyday decision making	Pearson Correlation	1	.825**
	Sig. (2-tailed)		.000
	N	40	40
I believe that AI digital tool integrated with E2E customer experiences platform system will leverage overall customer satisfaction.	Pearson Correlation	.825**	1
	Sig. (2-tailed)	.000	
	N	40	40

**. Correlation is significant at the 0.01 level (2-tailed).



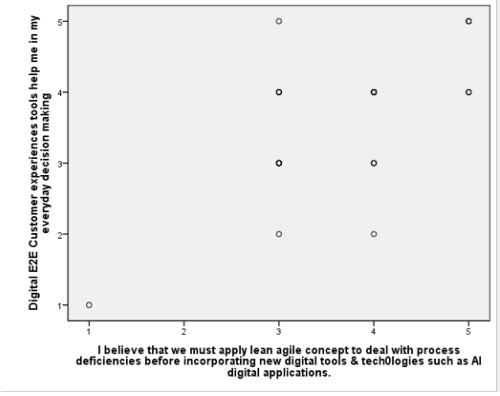
Correlations

[DataSet1] E:\DBA\Term-2\Operations\Rham Research\Final\DONE\Questionnaire_SPSS-NON-PARAMETRIC TEST.sav

Correlations

		I believe that we must apply lean agile concept to deal with process deficiencies before incorporating new digital tools & tech0logies such as AI digital applications.	Digital E2E Customer experiences tools help me in my everyday decision making
I believe that we must apply lean agile concept to deal with process deficiencies before incorporating new digital tools & tech0logies such as AI digital applications.	Pearson Correlation	1	.628**
	Sig. (2-tailed)		.000
	N	40	40
Digital E2E Customer experiences tools help me in my everyday decision making	Pearson Correlation	.628**	1
	Sig. (2-tailed)	.000	
	N	40	40

**. Correlation is significant at the 0.01 level (2-tailed).



5.4 Test of hypothesis

Tests run on 4 variables to decide about the initial hypothesis at confidence level=95%, and all the three initial hypothesis are accepted based on the below SPSS results:

T-Test

[DataSet1] E:\DBA\Term-2\Operations\Rham Research\Final\DONE\Test of Hypothesis\Questionnaire_SPSS-NON-PARAMETRIC TEST.sav

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
What percentage of your customers' requests do you think can be done remotely with the support of different digital capabilities?	40	84.00	26.096	4.126

One-Sample Test

	Test Value = 90					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
What percentage of your customers' requests do you think can be done remotely with the support of different digital capabilities?	-1.454	39	.154	-6.000	-14.35	2.35

Nonparametric Tests

[DataSet1] E:\DBA\Term-2\Operations\Rham Research\Final\DONE\Test of Hypothesis\Questionnaire_SPSS-NON-PARAMETRIC TEST.sav

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of I believe that AI digital tool integrated with E2E customer experiences platform system will leverage overall customer satisfaction. is the same across categories of What is your age?.	Independent-Samples Kruskal-Wallis Test	.390	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Nonparametric Tests

[DataSet1] E:\DBA\Term-2\Operations\Rham Research\Final\Questionnaire_SPSS-2.sav

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of I believe that we must apply lean agile concept to deal with process deficiencies before incorporating new digital tools & tech0logies such as AI digital applications. is the same across categories of Which of the following best describes your role in the organization?.	Independent-Samples Kruskal-Wallis Test	.379	Retain the null hypothesis.
2	The distribution of I believe that AI E2E digital applications only can solve the major process deficiencies is the same across categories of Which of the following best describes your role in the organization?.	Independent-Samples Kruskal-Wallis Test	.370	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

6. CONCLUSION

- Initial analytics revealed that about 65% of respondents have from 2 to 10 years of professional experience, which sounds good as experienced respondents and reflects new generations insights. Study covered the whole organizational levels, where management represented about 40% of respondents and other lower levels represented about 60% of respondents which enrich the variation of input variables and relevant aspects. It was noticed that the major percentage at all levels was strongly agree on the necessity of applying Artificial Intelligence and Lean culture and their strong impact on their businesses
- It was noticed from all respondents that we still have a lack in knowledge and skills necessary to apply Lean concepts and Artificial Intelligence technology, 48% of respondents highlighted the missing digital tools for managing their processes cycle time, 36% of respondents highlighted the missing digital tools for managing Lean customer experience. About 72 % of respondents believes that not less than 60% of

customer's requests could be remotely handled by using digital technology

- All respondents believes that end-to-end artificial intelligence applications to measure customer experience are valuable for their organizations and help them drive growth, specially to manage accounts 30%, performance management and reporting 55%
- About 72% of respondents believe that digital customer experience will enhance their decision-making process and will enable better visibility and management for customer satisfaction through out the whole customer journey and about 76% of respondents are sure about the sure improvement of customer related processes and the leverage of customer satisfaction through applying digital customer experience platform
- About 60% of respondents agreed on the necessity of applying lean tools to fix process deficiencies before incorporating new digital tools and technologies, and they also believe that this could be applied on all types of customers at all segments and not less than 76% of respondents agreed on the necessity to apply new digital tools and technologies based on top-down approach.
- There is a positive, direct, and strong correlation between: Overall Digital Maturity, AI effect and lean Culture (The leadership at this company encourages digitality) & Overall Digital Maturity, AI effect and lean Culture (Management shows that digitality is important through its actions) Which indicates that leadership is crucial in applying the artificial intelligence and lean concepts and they have the major effect on the encouragement and driving the whole stakeholders to remove all types of waste and apply the digitalization technology, results could be generalized on the whole population.
- There is a positive, direct, and strong correlation between: Digital E2E Customer experiences tools help me in my everyday decision making & I believe that AI digital tool integrated with E2E customer experiences platform system will leverage overall customer satisfaction. Which indicates that applying digital customer experience tools and integrating them into the daily decision-making process will leverage customer satisfaction and loyalty, results could be generalized on the whole population.
- There is a positive, direct, and moderate correlation between: Digital E2E Customer experiences tools help me in my everyday decision making & I believe that we must apply lean agile concept to deal with process deficiencies before incorporating new digital tools & technologies such as AI digital applications. Which indicates that removing deficiencies and waste from a process before incorporating new digital tools & technologies such as AI digital applications, will increase the efficiency of some of your decisions, results could be generalized on the whole population.
- We will accept the null hypothesis that states that (H0 =AI digital tool integrated with end-to-end customer experience platform system will leverage overall customer satisfaction)., (H0)
- We will accept the null hypothesis that states that (H0 = We must apply lean agile

concept to deal with process deficiencies before incorporating new digital tools & technologies such as AI digital applications), (H0:1)

- We will accept the null hypothesis that states that (H0 = AI & End to end digital applications only can solve the major process deficiencies), which supports applying first lean tools to remove all types of waste before implementing digitalization, (H0:1)
- We will accept the null hypothesis that states that not less than 90% of customers' requests at any organization could be done remotely with the support of different digital capabilities (H0 =90%), (H0:2)

7. RECOMMENDATIONS

The insight of this research, data, and information collected and analyzed. There are many challenges that obstruct improve and adapting the artificial intelligence applications and digital customer platform as end-to-end process such as Lack of commitment of top management, absence of leadership, Lot of customizations, ineffective communication, cultural issues, lack of digitalization skills and knowledge necessary for application, lack of skills and knowledge related to lean tools application, lack of necessary resources and budget constraints.

Several recommendations to overcome these challenges for improving and adapting an Effective Artificial Intelligence on End-to-End Customer Centric Business Model to achieve competitive edge and leverage customer satisfaction from the researcher's viewpoint, as explained below:

Applying an Effective Artificial Intelligence on End-to-End Customer Centric Business Model requires first a top management commitment to be reflected on the organization strategy and budgeting scheme to secure the needed resources for every function and to build the necessary infrastructure that will support the creation, implementation, and improvement of the whole project steps. Then it's highly recommended to start with identifying all types of waste into all business processes, into the early planning stage before adopting the artificial intelligence tools and customer digital platform to ensure the new model efficiency and effectiveness.

Applying the Artificial Intelligence on End-to-End Customer Centric Business Model not only require financial resources but also need investment in human resources and the support of TOP Management. Employee training and development is considered a key enabler in the successful implementation of the system. Human drive a machine where he uses it to get the best of its capabilities. Many previous cases show a low level of effectiveness due to incompetent human resources that can use and develop this system.

Developing this model needs good planning and preparation phases. The need of the company should be carefully identified and assessed precision analysis should be conducted to determine the best convenient systems and tools that can suit and fit well to the company. During all stages of this project starting from planning, implementation and follow up, its strongly recommended to carry out all phases by a teamwork from all relevant functions to ensure satisfaction of all stakeholder's

requirements.

To start the model implementation in a company there is a strong recommendation to make a pilot test. This pilot test will enable the company cross-functional team (Technical and managerial) to carefully access the performance and the change required to be done before going real implementation of the new system.

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