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Strategic Satisfaction and Delight Realisation

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Abstract

Customer satisfaction leads to higher customer loyalty and therefore to higher profits. Therefore, companies should strategically aim for customer satisfaction. In practice the realisation is often not in focus or not conducted well.

Therefore, a case study with an improved approach to realise satisfaction in the retail business, and potentially in general was developed.

It also addresses issues that underpin a key question for many of companies: How can we gain and retain loyal customers?

The central question of how to satisfy and delight customers in practice is addressed. It is questioned how satisfaction and delight can (ideally) be created. Existing literature was reviewed to find answers and was further developed and combined with new insights from expert interviews. To derive this new insight, an appropriate methodology and methods were selected. Convergent in-depth interviews were shown to be a developed method that offered penetrating managerial insight. The output of the literature review led to a new combination of knowledge that already set a new basis for customer satisfaction with the derived models. In combination with the expert interviews a case study was developed. This case study on how to realize customer satisfaction and ideally delight quickly in a company or organisation is described in detail. The case study can be used as guide to improve the own organisation in practice.

Keywords: customer satisfaction, customer delight, retail, marketing, services, loyalty

Higher margins through loyal customers

Research evidence shows that it is undoubted that customer satisfaction leads to higher profits; therefore, companies should to strive for it, if consistent with organisational aims and objectives. It is known that higher levels of satisfaction or better states of delight, lead to higher loyalty levels (Power J. D, 2012). According to a study of Power J. D (2012) it needs service excellence to create customer delight to gain increased customer loyalty. "Loyalty in a business context which describes a customer´s willingness to continue buying from a firm over the long term and recommending the firm´s product to friends and associates. Customer loyalty does not just refer to customer behaviour. It also includes preferences, liking, and future intentions" states Wirtz et al. (2012, p. 360). Four factors exist (Wirtz et al., 2012) that cause higher margins for companies because of loyal customers:

• Increased purchases due to customer growth or purchase concentration
• Reduced operating costs because of less demands based on each other's experience
• Referrals to other customers result as additional sales and marketing savings
• Price premium because of less price sensitivity and no promotional discounts

The literature also offers the concept of the lifetime value of a customer (Rust R. T. and Oliver R. L, 2000) that increases returns and is based on customer loyalty. It can be summarised that different studies confirm that companies with loyal customers generate higher earnings and that loyalty is the result of satisfaction and delight.

Insights from literature

The ideas and concepts presented in the literature with their reflected insights provide a valuable base for further research. The thoughts of Kano and his collaborators give the basis for a clear understanding of customer satisfaction. It is however a general view on the topic. More difficult to understand for sure is the right level of the one-dimensional requirements as these are overlapping with must-needs and attractive requirements, as Mikulic and Prebezac (2011) point out. Kano is also clear on the distinction between 'articulated' and 'not-expressed' requirements. This distinction underlines the subjective part of expectations. Johnston gives more detail how to realise (and how not) to realise satisfaction and delight. His work therefore is seen as a more detailed basis for managerial realisation. His view is valuable above all in the formulation of a vision and overall strategy as the statement is clear, but he does not go into the detail of operations. The EFQM model (2012) also provides a good overview of managerial topics that have to be addressed for ideal operationalisation, but on the other hand it again lacks the details for the operative level. This leads to the framework of great service from Berry (1995). He gives a very good overview of the key topics for operational realisation. These topics have to be addressed and further detailed for final success on an operational level (here, in the context of premium automotive retail). These ideas and concepts as a sum build a good basis for strategy, vision and realisation.

The EFQM model, Berry´s view and the other reviewed authors are used to summarise the operationalisation knowledge. A successful operationalisation of customer satisfaction is (from observations in the literature) to be based on senior management support, a dedication to service leadership and excellence, as well as customer focus as an objective. Starting from that basis, an information system to monitor service quality is needed. These two steps are preparations for the third step – the choice and definition of the service strategy. The service strategy must be defined. These range from customer satisfaction based on 'must' needs to customer satisfaction/delight with individualisation and attractive requirements. After the strategic dedication and definition of a service strategy, the implementation starts with well-defined processes and appropriately derived organisational structures. After all these steps, the key factor for success - people – becomes the focus. Leadership should be participative and conducted by example through managers (Berry L, 1995). Working in teams as well employee motivation and identification with the company should be generated (Berry L, 1995). Recruitment should focus on service-oriented talents. Competence creation, knowledge and skill development for all employees and very focused for Middle-Management are important topics for human resource development (Berry L, 1995). Employees need empowerment for own decisions regarding customers and for their own motivation. The complete chain of service excellence should be measured and rewarded (Berry L, 1995).

Expert Interviews, analysis and results

The methods adopted are qualitative interviews. In the research study a sufficient number of in-depth interviews until saturation of insights, were performed to represent different opinions regarding customer satisfaction. This allows for a deeper insight into the

motivations, reasons and influencing factors behind customer satisfaction and delight and their realisation. In this case the interviewees work in the automotive premium retail. The in-depth interviews have been conducted to cover examples of direct customer contact, of market research as well as to cover the opinions of strategists. This research seeks understanding through sources that offer the appropriate amount and type of data (Carson et al., 2001). The insights were generated by the use of semi-structured convergent in-depth interviews (Carson et al., 2001) in order to gain knowledge and understanding about customer satisfaction and its realisation. Data making and analysis is based on a careful reflection of each interview. Mintzberg (1979) observed that data do not generate theory – only researchers do. After the preparation of the interviews and their completion, data analysis follows. During the interviews the words are recorded or notes are taken, depending on the agreement of the individual interviewee. These records are then used to generate a full transcript analysis, giving rise to a detailed summary and assessment after each interview. Dawson (2002, p. 118) explains content analysis as ´a very common approach where the researcher systematically works through each transcript assigning codes, which may be numbers or words, to specific characteristics within the text´. According to Collis and Hussey (2003) content analysis is a formal approach of qualitative data analysis. Mostyn (1985, p.117) describes it as 'the diagnostic tool of qualitative researchers, which they use when faced with a mass of open-ended material to make sense of'. According to Given (2008, p. 120) content analysis is the intellectual process of categorising qualitative text data into clusters of similar entities, or conceptual categories, to identify consistent patterns and relationships between variables and themes. In qualitative research, content analysis is interpretive, involving close reading of text.

The second stage of analysis clearly needs some reflection and intellectual input from the researcher; evolving over time from immersion in the data, in-depth consideration of the categories identified in the data and then building upon them. Reflection is oriented towards new insights and theories that are going to be documented in a research report, with the aim of disseminating the findings to an audience. This report must cover the topics of literature, methodology, research description, interpretation and quality of research, transparency, trustworthiness as well as ethical concerns should be integrated (Thiétart and Wauchope, p. 3). The qualitative content analysis works through a systematic procedure to extract information. The text is searched through raster scanning for relevant information (Gläser et al., p. 46). Content analysis provides an approach to understand the content of spoken data material. The material of interviews is technically analysed to guarantee a maximum of objective, systematic and quantitative quality and the avoidance of subjectivism (Mayring P, 2010).

Through a mind map summary and derivation of generalisation titles for the found topics the following main fields of success factors were created. It can be underlined that customer satisfaction is seen as the basis for delight and to reach satisfaction the fulfilment of the minimum expectations based on the customer expectations is necessary. It can be analysed that the key focus is on the organisational and operative topics for success. These are namely positive environment, right people, management by example, process and knowledge, team objectives, communicate, vision and strategy and one face to the customer.

General success factors:
- Define Vision, Strategy and establish firmly (participation) (6x)

Operative success factors:
- Management by example (8x)
- Continuously train processes and satisfaction knowledge and do it daily (6x)
- Define, measure and incentivise satisfaction-team-objectives (8x)
- Positive, friendly, trustful, empowered, participative easy environment with happy employees (7x)
- Reward excellence (focus recognition) (5x)

Organisational success factors:
- High maturity of processes (transparency, reliability) (7x)
- standardisation & repeatability) (8x)
- Introduce (CRM) and optimise IT (easy to use) (5x)
- Empowerment of employees (4x)
- One face to customer (no silos: sales / aftersales, Team) (8x)
- Hire right people (satisfaction talents: empathy & personal touch, extra mile, intrinsic motivation, authentic, relaxed, friendly) (8x)

Behavioural success factors:
- Listen to customer and understand individual needs and expectations (4x)
- Transparent active (problems) and responsive communication (7x)

Case Study: Ideal Satisfaction and Delight Realisation

This section shows how the realisation of customer satisfaction and customer delight might look. First of all, the silos between sales and aftersales have to be taken down, because the organisational and retributive separation avoids ideal customer treatment and ideal customer relations, but also customer value for the company. Usually during the acquisition of a product, the buyer has contact to a salesperson. The salesperson helps the customer to configure or select the product and leads the customer through the process until the product is delivered and handed over. The salesperson enters into a relationship of familiarity and trust with the customer because joint time and effort is invested. Usually the customer comes back to the retailer in cases of queries and problems and contacts the salesperson, because s/he is the known person of trust. The salesperson usually hands over the case to a service consultant in after-sales who does not know the customer, but yet handles the process from a technical and process point of view. This leads to a situation of one lost relationship and also lost information for the salesperson and also for the service consultant. Often a salesperson has a medium to high educational background and a certain communication skill. After-sales service consultants usually are internally developed employees. So, typically, they are technical experts but no communication or people treatment specialists.

The first lesson from this argumented model is the learning also derived from the interviews, that the interface to the customer has to be seamless, uniform, unitary. 'One face to the customer' is key to treating him or her well, because all the knowledge and insights about the customer are with one person. A strong and easy to use CRM – System can help to support here. But again, it is about people and so people are required as interfaces. To handle all customers 'with one face' means the company needs a new structure that gives the salesperson more time for the customer. That means the organisation has to support him/her by decreasing his/her administrative work. This suggests the need for a team of a salesperson, administrative assistant and service employee. Such small team could handle a group of customers. The structural and

process details have to be developed through a process and structure analysis. Usually salespeople work in a system of geographical areas of responsibility and work on customer lists structured by names, or simply on a first come, first. Served basis. This type of approach has to be improved and matched to customer types and characters. Better that the salesperson, or "customer consultant", matches well to the customer than to a geographical area. The second lesson is that the salary system has to be revised, a point Nwabueze (2011) endorses. Often, a service consultant earns less than a salesperson. This differential potentially destroys ex ante any willingness to support and cooperate with the salesperson by a service consultant and vitiates any motivated team-work. Summarising, the organisational set – up in the business has to be changed involving structure, processes and salary-system.

The next step is to consider the Positive environment (field 1): positive, friendly, trustful, empowered, participative, easy with happy employees (Employee motivation and identification). Most of these words lead to a leader (manager) with an appropriate approach and character (additional to the managerial skills). Somebody optimistic (positive), friendly and trustworthy is needed to give trust and power to the employees. His or her personal conviction is to lead participation with openness and an 'easy' general attitude. Somebody who really lives the role with passion and not only as a job. These are characteristics that might be said to characterise transformative, servant leadership. These points lead to the first step of a general positive and happy environment for the customers, employees and stakeholders.

The interview output is that communication not only with customers, but also between the team members is crucial. This behavioural aspect has to be understood and trained and lived on a daily basis. An understanding of transparency is important, because any negative message needs to be combined with a positive plan to (re)solve by means of a solution that leads to satisfaction. The active and responsive part has to be embedded in the thinking of the employees. No message is worse than a bad message. Often misunderstandings follow miscommunication. Listening carefully to customers and understanding their individual needs and expectations is required. Employee time invested is, together with esteem and respect, crucial for customer communication. This point also leads back to the process analysis ensuring staff have sufficient time for the customer. Understanding, training and management by example are the right instruments for realisation here, the literature the interviews and experience suggest.

To live and realise all these processes require the right people. At the beginning of this chapter the character, interpersonal skills of the manager in addition to his or her management skills in general were identified in general, for the customer contact functions persons with empathy, a personal touch in their relationship to customers, open minded attitude, a general positive attitude to satisfaction, authenticity, relaxed character and friendliness are needed. Often this kind of person can more readily be found in other sectors such as hotels or fashion retail. These empathetic aspects of a person can hardly be instilled by training. The person has to be hired with this skill. Completing the picture also the willingness to go the extra mile, an intrinsic motivation, and the already explained communication skills are needed. This type of focus and approach can be found in the literature dealing with configurational models for strategic HRM (See Golding & Beardwell in Beardwell and Thompson (eds.), 2014) Summarising, the dealership has to compete for this talent and train and form the team.

Where the structure changes to the concept of partner having but one face to the customer supported by a team, the capacities and role models and processes, have to be analysed and new ways to suit the required configuration have to be developed. The aim has to be time for the customer and very stable standardised, mature, repeatable, reliable, transparent and secure processes to deliver the promised and more. Through process analysis, team workshops, joint development of new processes and then writing handbooks, training, living the processes as well as steady review through a plan do check act circle moves the configured organisation towards the goal. This approach should bring also the team together and motivates them. Knowledge and competencies have to be sharpened on all levels to understand each role, every process step and the overall approach of fulfilling the promises and customer delight through organisational learning.

Senior managers must also support the approach, to underline not only its importance but also to empower the manager that then himself / herself empowers the employees. Coming from the interviews, leadership requires time with the employees, and here the continuous and daily penetration of satisfaction is important. Work at teamwork has to be realised in the new structure so empowered servers have the necessary time for the customer. For empowerment, rules, activities, competencies and responsibilities have to be defined for every job role and staff recognise that senior management is committed to such a learning approach.

To support the degree approach and to gain time for the customer a supportive IT and CRM - including a service quality information system (customers & employees) – may well be necessary. Employees need to be trained to use contemporary tools to know about their customers, share information and to handle customers well. Any feedback from empowered employees has to be used positively to learn about the customers and to improve the organisation in a PDCA circle - logic. "The need for the people who use customer relationship management (CRM) systems to 'buy-in' is widely recognised as a critical success factor" say Corner and Rogers (2005, p 267), while pointing out that it is infrequently operationalised.

Lost sales today are often created in after sales because the service consultant does not actively feed the CRM or salesperson about the desires and thoughts of the customer that he or she is dealing with at the moment, because it is not his/her focus and because of lack of time and teamwork.

The interviews showed that honest recognition from superiors is more important than economic recognition for excellent results and also that incentives have to be given for the team and not to single employees to foster good cooperation and team work.

Learning from this insight means giving team objectives on service excellence, customer focus, customer satisfaction and delight. The objectives have to be measured and rewarded. An interesting tool is also the recognition, noted by interviewees, of the best customer feedback and the involvement of employees as best practice learning in the monthly team meetings.

Coming from such lessons, the organisation has to be routed to have the customers always in focus. Based on this idea, a service vision and strategy has to be defined anticipatively with the employees. This vision and strategy has to be established firmly with all employees through steady communication, training and underlining, in the manner advocated by Salagean (2014).

Contribution to knowledge

There are two areas of contribution – one to general understanding of CS/CD, the other an advance in knowledge related to implementation to achieve CS/CD. Further, characteristics associated with the emergence of CD were found: over-fulfilment of individual expectations (go the extra mile), standardise on a high level with no surprises, give attention, invest time with individuality, authenticity and empathy.

The second contribution to knowledge is a case study for customer satisfaction realisation that is easy to understand and gives guidance to implementation. This is based on profound expert knowledge from the field.

References

Beardwell, J., & Thompson, A. (2014). Human resource management : A contemporary approach. ProQuest Ebook Central https://ebookcentral.proquest.com

Berry L. L. (1995): "On Great Service – A framework for Action". New York: The Free Press.

Carson, D., Gilmore, A., Perry, C., & Gronhaug, K. (Eds.). (2001). Qualitative Marketing Research. SAGE Publications, Ltd. doi: 10.4135/9781849209625.

Collis, J, Hussey, R. (2003), Business Research: A Practical Guide for Undergraduate and Postgraduate Students (2nd ed.), Palgrave Macmillian, London

Corner, I., & Rogers, B. (2005). Monitoring qualitative aspects of crm implementation: the essential dimension of management responsibility for employee involvement and acceptance. Journal of Targeting, Measurement and Analysis for Marketing, 13(3), 267–274.

Dawson, C. (2002), Practical Research Methods, How to Books, Oxford
EFQM (2012). „ An overview oft he EFQM Excellence Model". Brussels: Presentation. pp. 1 - 8.

Given, L. M. (2008), The Sage Encyclopedia of Qualitative Research methods, Volumes 1&2, Sage publications, London

Gläser J., Laudel G. (2010). Experteninterviews und qualitative Inhaltsanalyse. Wiesbaden: VS Verlag.

Mayring P. (2010). Qualitative Inhaltsanalyse. Weinheim und Basel: Beltz Verlag.

Mikulić, J., & Prebežac, D. (2011). A critical review of techniques for classifying quality attributes in the Kano model. Managing Service Quality: An International Journal, 21(1), 46-66

Mintzberg, H. (1979). The structuring of organizations: A synthesis of the research. Englewood Cliffs: Prentice Hall.

Mostyn, B. (1985) The Content Analysis of Qualitative Research Data: A Dynamic Approach, in Brenner, M., Brown, J. and Canter, D. (eds) The Research Interview, Uses and Approaches, London: Academic Press, pp. 115 – 46.

Nwabueze U., (2011). Implementing TQM in healthcare: The critical leadership traits, Total Quality Management, 22(3), 331–343

Power J. D. (2012). „Beyond Satisfaction: J. D. Power 2012 Customer Service Champions - Brands that deliver service excellence to maximize business results". Westlake Village: Study.

Rust R. T. and Oliver R. L. (2000). "Should We Delight the Customer?". Journal of the Academy of Marketing Science, Volume 28, No.1, pages 86 - 94.

Salagean, H. C. (2014). Implementation Of Quality Management - The Importance Of Leadership Styles. Cluj-Napoca: Babes Bolyai University. Retrieved from https://search.proquest.com/conference-papers-proceedings/implementation-quality-management-importance/docview/1636544211/se-2?accountid=27114

Thiétart, R., & Wauchope, S. (Eds.). (2001). Doing Management Research. SAGE Publications Ltd. doi: 10.4135/9781849208970.

Wirtz, J., Chew P., Lovelock C. (2012): "Essentials of Services Marketing". Singapore: Peareson Education South Asia Pte Ltd.

A (reflective) journey to academic maturity

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Abstract

In 2015 it seemed the perfect time to pursue my PhD. I had a safe workplace and no other responsibilities. However, the more time passed and the deeper I got into the work and what it meant, I started to have doubts and felt overwhelmed and not ready for a journey so demanding for the next few years. Then, some lifechanging events (both positive and negative) demanded my full attention and I saw this as a good reason to pause and step back from my PhD journey, questionable if I would ever pursue it again. Five years later, amidst a global pandemic, a new start-up idea made me look back into the world of electronic- and mobile Health, which was the core of my PhD topic back then. The research I had to do for the start-up led me back to the idea of continuing my PhD. But this time it was and is different in terms of motivation, engagement and understanding the overall idea of academic research and my own topic alike. Reflecting on that, it is easy to understand why: there is a big difference between when time seemed to be right from a theoretical perspective and when time actually is right from a personal perspective. What I had gone through without knowing (and actually acknowledging just now) was the inner process of academic maturity. A process that equipped me with what I needed in order to be able to pursue that complicated and demanding road of a PhD.

Methodologically this essay is based on evocative autoethnography as it is reflecting on the authors personal experience and thinking.

Introduction

2015, five years after completing the master's degree, it seemed inevitable that this would be the right time and place to start (and hopefully finish) a PhD. Not only was I told by all my professors and peers that this is the ultimate degree and the finalization of all my work so far, that one degree that closes the academic career circle. I figured it was also the perfect and only time to do it now as I had no children, a safe employment and therefore could dedicate enough time for a doctoral degree. But the following years and my personal development showed me the opposite.

Discussion

Reflection on the past

Despite all the effort one has to put in order to obtain a certain degree, I always liked academic work. Not only because one can see what he/she has accomplished in the form of a diploma or publication in an academic journal but also because the product of the hard work is as unique as the person working on it, every research shows its topic from another particular, individual angle. And at the end of the day, one contributes to knowledge, gives something back, shares his/her thoughts, ideas and views of the world, finds new results and/or challenges old ones. It was very clear to me very early during my Bachelor studies that I want to close that academic learning circle by pursuing a PhD degree. At one point in my career, I felt it was a good timing and as a German PhD or

'Promotion' as it is called in Germany was not an option, I enrolled for a distance learning program for a Doctorate of Business Administration at a University in the United Kingdom. As of then hundreds of hours were spent in front of the computer, reading and writing, or in a classroom for the modules which needed to be passed in order to be eligible for the RD1 followed by a dissertation at the end. Hours of lectures passed, hundreds of pages of papers and articles needed to be written. Those were all followed by personal evaluation and of course my work was graded by the module lecturers. Even though it was much more of a guided learning style than most other doctoral programs, it became clear very early to me that it was different from everything I have done before - the abstract thinking and understanding as well as all the new concepts I was presented, it all felt overwhelming and too demanding very quickly. The first time in my entire life I had the feeling of not being able to comprehend and really process what I was taught. Judging by my lecturers' feedback, I was doing well. Judging by my feelings, I wasn't. Already back then I felt like I was producing what was asked from me without understanding the genuine idea behind it. A good metaphor to understand my state of mind at this point would be drawing from a blueprint without knowing the actual idea behind the building.

After I passed all modules and was just starting to write and prepare my Research Proposal, my life took a heavy turn very abruptly. There is no need to go into the details at this point but there were some events happening in a very short time that threw stones in my way in my personal life. Some of the events devastating, some of them the most beautiful news I ever got but surely all of them lifechanging. I was forced to and gladly accepted taking a break. At that time already, I wasn't even sure if I will ever return to my PhD project again. In the following years, I had nothing to do with anything academical and never even thought about staying in touch with my course-mates or even supervisors. I even found myself lying to others about never having started any kind of PhD or post gradual project, whatsoever.

I did what society, my family and everyone else (including myself) expected of me: I was a mother, I raised my child, and I went to work. And as normal as that sounds, it basically took all of my power and time. My academic part was basically non-existent anymore.

Reflection on the present

In the very early months of the year 2020 the world as it was known changed completely and is not back to normal ever since. The Covid-19 pandemic spread over the world and forced many countries into complete lockdowns (World Health Organization, 2020), shops were closed, children did not attend day-care or schools, home-office for everyone was the new reality. It was then, when a good friend of mine asked me to join him in his new company. A mobile health (mHealth) company and at that moment only an idea on paper. His reason to ask me was my knowledge on the field on mHealth, due to my work experience but also due to that dissertation on mHealth, I once was planning on writing. From that point on, the abovementioned gratification of academic work and everything why I liked it so much stuck on my mind and after some hours of research for both, the new company but also on the academic field, it became clear that this would be the right time to finish what I've started long ago. I altered my topic accordingly and presented it to my supervisor. He agreed on working with me again and then, in contrary to how it has been in 2015, everything fell into place:

My topic had the potential to suit both, the new company and my dissertation. Every essay and paper I had to write felt much easier, it made more sense to me.

I now am able to understand much more complex and abstract ideas, I am even in the position to formulate them by myself. One of my best essays so far was the most abstract piece I have ever written. I am not only ready but also eager to spent days and nights on research and writing. What was a burden back then, now is something that actually challenges me positively and makes me see things in a more multifaceted, conceptual and philosophical way than ever before. Just like Lally (2012) reflects in her paper, there is more than one way to do things in a PhD, which differs from a Bachelors or Master's degree. And one has to understand this. At that point I started to realize that a doctoral dissertation is far more than just an assignment, that I am in the lead of that project and the only person I should be doing this for is myself.

Conclusion

Already by reading the first two paragraphs of this reflective paper, one can see that I basically never really knew what a post gradual program would look like or what the actual difference in comparison to a master's program might be and how much higher the level one is operating on is. I was just not prepared enough for what was about to be thrown at me, neither theoretically nor personally.

Looking back and reflecting on that journey the explanation for the "why?" is easier than I thought. Even though the time may have been right, I was not. Even if I was 30 years old, I was not mature enough for that kind of academic work. The conclusion to my whole reflection and story behind this paper is: It is not the theoretical perspective of time that has to be right, it is practical or moreover personal, inner concept that has to be at a level where the mind can process information on a postgraduate level.

Being ready to pursue a PhD cannot be narrowed down to having the financial means, the right institution, the time at hands to write a PhD dissertation. It really is the complex synergy of academic maturity and personal readiness. And how that feels and when one feels it - that cannot be studied by any research and found in any paper. That has to be a personal decision. At that point maybe one even has to fail once in order to be able to reflect on that failure and see what the difference is.

Even this kind of conclusion is something I would not have been able to draw in 2015 because my academic maturity was not there, yet. What my life threw me were not rocks but I see it now as steps as I needed to take one step back (or up) to be able to see things differently and to develop into a researcher rather than a student. If I would have been there to 100%, those problems thrown in my way would not have had so much influence on my doctoral work, it was a hard time but this is how life is and I would have kept going on maybe in a slower pace, but I would have never allowed myself to give up.

In conclusion it can be said that the situation now, with two small children, starting a new company and a worldwide, unprecedented pandemic going on all at once seems to be the perfect time for me to become the researcher and academic I could not be in 2015 and that only because I finally gained the academic maturity.

Methodology

It is proven that reflective writing, being a major pillar of reflective practice, enhances the writer critical thinking and analyzing abilities. Reflecting can show the author what discourses in his/herself can work against him/her during research. That is, in how far we

ourselves can manipulate unknowingly what we see as "objective". (Liamputtong and Rumbold, 2008) A skill(set) that is crucial for qualitatively high research.

This also explains this papers purpose: A reflective paper is an important tool for the authors ongoing journey towards mastering a PhD as it is an important mean to understand an author's motivation and critical way of thinking in retrospect, once the research project is finished in order to make the research process itself more transparent but also to account for (possible) personal bias (Ortlipp, 2008). Further, literature shows that even though a research student needs to have good analytical and critical thinking skills, creative development should be weighted equally (Whitelock et al., 2008).

Being described as the process of systematically analyzing personal experience, the approach of autoethnography challenges classical ways known in research. (Ellis et al., 2011).

The core of Autoethnography is the symbiosis between our own experience within our own culture systematically analyzed. Autoethnography can be divided in evocative and analytic autoethnography (Byczkowska-Owczarek, 2014). The author him/herself is the main element researched (Wall, 2008). There are two types of autoethnography: evocative and analytic autoethnography, the first one being less methodologically limited whereas the second one is rooted in the analysis of data and its outcome (Anderson, 2006). Though critically analyzing the past and its impact on the PhD journey so far, this papers' main sources are the authors personal experience, thinking and reflections, therefore it is based mainly on evocative autoethnography.

Limitations
Though becoming a part of qualitative research, reflective writing is still not acknowledged enough as part of the methodological processes in research (Jasper, 2005).

References

ANDERSON, L. 2006. Analytic Autoethnography. Journal of Contemporary Ethnography, 35, 373-395.

BYCZKOWSKA-OWCZAREK, D. Researcher's personal experiences as a method of embodiment research. 2014.

ELLIS, C., ADAMS, T. E. & BOCHNER, A. P. 2011. Autoethnography: an overview. Historical social research/Historische sozialforschung, 273-290.

JASPER, M. A. 2005. Using reflective writing within research. Journal of Research in Nursing, 10, 247-260.

LALLY, E. 2012. The PhD research journey is not for the faint-hearted. Kai Tiaki: Nursing New Zealand, 18, 18.

LIAMPUTTONG, P. & RUMBOLD, J. 2008. Knowing differently : arts-based and collaborative research methods, New York, Nova Science Publishers.

ORTLIPP, M. 2008. Keeping and Using Reflective Journals in the Qualitative Research

Process The Qualitative Report, 13.

WALL, S. 2008. Easier Said than Done: Writing an Autoethnography. International Journal of Qualitative Methods, 7, 38-53.

WHITELOCK, D., FAULKNER, D. & MIELL, D. 2008. Promoting creativity in PhD supervision: Tensions and dilemmas. Thinking Skills and Creativity, 3, 143-153.

WORLD HEALTH ORGANIZATION 2020. Considerations in the investigation of cases and clusters
of COVID-19.

Application of data mining to recommender systems

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Abstract

In the last few decades, globalization, hyper-production of all kinds of goods, and most of all, global IT and online sales have brought new opportunities for customers. Stores are no longer limited by the size of their sales space, storefronts, and shelves. Shelves in physical stores are now represented by menu listings and links in virtual stores that can be "indefinitely" large. Making the right decision based on the information we get from a few friends or acquaintances is no longer possible. Now, much more useful information is needed, i.e., other people's opinions and experiences (which we don't know) to make the right decision. The development of recommendation systems has caught the attention of many experts from a variety of disciplines, including data mining, statistical and mathematical methods, machine learning, and human-computer interaction research. The recommendation system is a specialized part of filtering (data mining), based on finding, things, or objects that might be useful or interesting to the user. This paper will outline the principles of recommender systems and provide simple examples that illustrate specific problems. Through the appliance of classification methods, it was shown which recommendation systems exist and on what basis they differ. Methods used by these systems are described, but no specific programming algorithms were introduced. The "black box" method was used, which is typical for the analysis of complex systems.

Keywords: recommendation systems, collaborative filtering, personalization, survey.

Introduction

In the modern world of the Internet and information technologies, the amount of data that is generated every day is enormous. Almost all Internet users today contribute to the generation of huge amounts of data. By searching and visiting portals, social networks, online stores, etc., each person leaves behind an electronic trace, both consciously and unconsciously. All actions taken on online stores or social networks are tracked and stored. Actions mean searching for certain terms, opening certain content, commenting, evaluating, sharing it on social networks, liking, etc. If we take into account the number of internet users today, and their daily activity, it is clear that the amount of data is huge. It can be said that data in the 21st century, has the same status as oil in the 18th century – therefore it is an under-exploited resource of great potential. Data mining is an area that deals with the exploitation of this resource, i.e. extracts useful information from large databases. This allows those who receive this information to make certain decisions more easily, be it in the world of business, sales, procurement, entertainment, etc. Doing better means bringing new ideas into the business, expanding, embracing new ideas and opinions. A new philosophy emerges here stating that "good information always wins over opinion"[1]. Extracting quality information, information at the right time is what enables the great competitive advantage of those who own the data. From all the reasons stated above, it can be concluded that having as much data as possible in all spheres of human activity is now imperative. In the case of internet business, this refers to the collection of

data on all visitors, registered users, their online "behavior" (on online stores or social networks), affinities, tastes, etc. Collecting large amounts of data is not a cheap activity, and it requires exceptional financial resources. In order for all this to make sense, and to achieve the final goal, which is always an increase in profits, i.e. business improvement, it is necessary to get some useful information from this data. All data is recorded by various companies, which further use the data in order to increase profits. One of the ways they do this is by developing a recommendation system. These are systems that enable companies to better market the products or services they offer, by giving their users (website visitors) certain recommendations about their offer. These recommendations affect people and they often become customers of the products or services that are offered. Business data of large companies (Netflix, Amazon, Google) shows that their business increases in the range of 35% -65% using such systems. The aim of this research is to get acquainted with the creation of recommendation systems. Recommendation systems have gone through several stages in their history, and there are several major types of them. The aim is to get acquainted with the basic principles and methods used in different types of recommendation systems and to gain a complete picture of their evolution and where they currently stand. Finally, to give some guidelines in which direction they should be further improved, i.e. how to address a current problem that has not yet been addressed by current recommendation systems, to improve their work and how to make them available in all spheres of human activity. After the historical review, the paper will explain the problems of the recommendation systems, their taxonomy and give a description of the parameters that affect the types and models of the system of recommendations. Then, the methods and the most common algorithms used by these systems will be discussed, as well as assumptions in which direction recommendation systems will be further developed, in terms of the latest technological advances, and computer systems that have "user awareness". At the end of the introductory part, the paper itself will state and make it become evident that recommendation systems are an effective tool in the business of online companies that offer products and services online.

The concept of the recommendation system is essentially based on the idea of using already known information or available information. This refers to the re-use of the information that is available to us at a particular time.

This principle existed long before information technologies and the use of computers and is not tied exclusively to the human species. If we look at other forms of life on earth, we can find that this principle is used. As an example, we can cite ants. If we observe one colony of ants, we will notice that their movement is in a column. This is because ants have an innate instinct to leave markers (in the form of chemicals that they secrete from special glands) and thus give instructions to other ants where they should go to find food, an anthill, and the like. This principle is also known as social navigation, which is a very simple mechanism that is extremely effective and can be observed in many forms of life on earth. We humans still very often use this principle of social navigation. As an example, we can cite the end of a match at a large stadium. If we don't know where the exit from the stadium is, we just need to follow the crowd (assuming everyone is heading towards the exit). In this way, using this principle, we will very easily reach the exit without asking anyone or looking for any stadium maps or the like. From the above, we see that the use of existing information, which is possessed by others, allows us to solve a particular problem, or facilitate certain decisions. Information becomes a basic tool that enables problem-solving, i.e. achieving a certain goal.

Extracting information - the first step.

A recommendation system is an effective tool in the business of online companies that offer products and services online. The emergence of information technologies leads to their use in the processing of large databases, and the extraction of information from them. When it comes to large data sets it will not give us good results, and it will not be of much use. It was necessary to improve this system, which brings us to the next steps in the history of the development of the recommendation system, and that is manual collaborative filtering.

Manual collaborative filtering - the second step.

In a large number of cases, searching for information about something that interests us is not only related to certain keywords, i.e. cannot be described by keywords alone. Often it can be related to our taste, the type of quality we are looking for, etc. In these situations, we need to have additional information that describes or evaluates what we are looking for, from other people. These other people don't have to be someone we know, but it's important to us to have that information. This is an informal community that has similar preferences, and that shares information about some kind of thing, all with the aim of helping each other to make the right choice. The first example of such a system was called Tepistry (1992), which was a database with comments. The comments were related to specific content in the database and the users themselves were able to manually mark, rate the content and mark it for a specific user (acquaintance). It was the first manual collaborative system in which, for example, Mirza could label some content as, "Dino might like this." or "Developers might like this." Each user could perform searches of the type: "Show me all the results that others have marked that I might like ...", or "Show me all the results that Mirza rated well." This was done using a special Tapestry query language. This system, and several other similar systems, were suitable only for smaller "communities" of users, and an automated collaborative filtering system began to be considered, which is the next step in the creation and development of a recommendation system.

Automatic collaborative filtering - the third step.

In 1994, the University of Minnesota and MIT in the USA formed a group of professors and students created a project called the GroupLens Project, which aimed to create an automated collaborative system. The project leaders were John Riedl and Paul Resnick, followed by Joseph Konstan. The study, as well as the algorithm that was done, were presented at the international conference CSCW in 1994. (Resnick et al.,1994.) The result was the first automated collaborative system CSCW-94 (Computer-Supported Cooperative Work 94), which was installed and tested on UseNet News. Usenet News was a very popular news portal in the USA at the time and had a large number of registered users who used the portal on a daily basis and searched for news that interested them. After the introduction of this system, each user could rate each news (text) with a rating from 1 to 5. The system would then suggest some news that would be interesting to that user, based on the ratings he gave for other news, that is, texts. The system did this on the principle of comparing ratings among users, and finding similar users (similar taste, related to the news), and suggested news that other "similar" users rated positively. Here, for the first time, the principle of finding a "neighbor" appears, i.e. similar users, and based on their tastes, ratings related to a particular topic, or filtering items. (Ala, 2013). The results of this testing on Usenet were surprisingly good. Users stayed on the site much longer, read more articles, and were generally delighted with the new system and its recommendations.

Articles proposed with grades 4 or 5 were twice as read as those with grades 1, 2, or 3. Users simply fell in love with the new system and many continued to use it even 12 months after the testing period.

The modern age - the time of commercialization

Nowadays, we can see recommendation systems everywhere. The most common recommendation systems are those in online stores, which aim to increase sales and retain customers. The most famous example of such a system is Amazon. The systems of recommendations in social networks, connecting people, such as the systems we can see on Facebook, LinkedIn, etc., have also made a big step forward. Then there are recommendation systems for websites that offer media, i.e. videos, movies, and music, where the most famous examples are Netflix, YouTube, Pandora, etc. Recommendation systems are becoming a segment of data mining, i.e. machine learning, which has been experiencing a boom and constant expansion since its beginnings in the 1990s. Some companies deal exclusively with this issue and offer their services in the development of recommendation systems. On the other hand, developers from all over the world, university professors, and students come together and create open-source libraries that provide a good basis or complete solutions for some of the problems of the recommendation system. Since 2007, a special international conference RecSys has been established worldwide exclusively for this area. At this conference, the most important names in the field of recommendation systems are presented, where they present the results of their research, new techniques and technologies they use, etc.

Recommendation systems

Taxonomy of the recommendation system

Recommendation systems occur in the IT areas of data mining, but also in the area of artificial intelligence. These systems are algorithms derived and made based on certain mathematical principles and formulas that give us from a large amount of data certain information needed to give adequate recommendations to the user.

If we look at recommendation systems as one complex system, we will notice several different dimensions, i.e. ways we can "measure" these systems. Recommendation systems can be observed and analyzed based on the following dimensions, i.e. aspects:

1. Area of operation of the recommendation system
2. What is the purpose of the recommendation
3. Type of recommended content
4. Whose opinions are involved in decision making
5. Level of personalization
6. Privacy
7. How credible are the recommendations
8. User interface (Interface)
9. Algorithms on which the system of recommendations are based

Area of operation of the recommendation system

When we talk about the area of operation of the recommendation system, it is important to know what we recommend. Do we recommend articles that contain any information?

News? Or some products? Also, if a person is interested in one product, should the system recommend another product related to it as a combination (combo)? Do we connect people (social networks) so we should recommend one person to another person? Do we recommend a playlist, where in addition to the similarity of content, the arrangement of these songs is also important?

For all of the above situations, recommendation systems must work differently, because the area in which they operate largely determines them. This is because the rules in one area do not apply in another area, and even more, they are often contradictory.
In certain situations, it is very important to always change new things, e.g. with the movie recommendation system, the system must recommend a movie that we have not watched, but which could be interesting to us, i.e. a film that the vast majority of people like us watched and rated positively.

Unlike the movie recommendation example, let's look at the food recommendation example. When a person buys groceries, the system should not always recommend groceries that the person did not buy, because the same groceries are bought, again and again, i.e. which a large number of people buy regularly.

For example, we can take bananas, which are bought by many people, and everyone who buys them will give positive reviews for the banana. However, their recommendation by the system will certainly not increase the sales of bananas, because people are definitely buying them. Spending space (space on the page reserved for a recommendation) on bananas would not be optimal. At that point, the system should recommend some groceries that might suit the person, judging by what the person is buying, not what most people are buying.

What is the purpose of the recommendation?

Another dimension related to recommendation systems is the goal of the recommendation. Most recommendation systems aim to increase sales, whether it is in a material or virtual way. In other cases, the goal is to educate the user. This can be through book recommendations, texts, or articles, and then the user can leave a comment about it or rate it. But there are other forms of education that have successfully used systems recommendations and one of the interesting examples of the OWL Tips which were created for more than 15 years, and represents one of the first recommendation systems. It was made by Frank Linton and is interesting in the way that it was a recommendation system that was included in systems like MS Word. It was ranked according to the ratings determined by the system by tracking which of the abbreviations were most used by other users. Once the system notices that a particular user is not using one of the commonly used abbreviations (by other users) it would offer the user to see how a particular abbreviation is used.

Type of recommended content

In this dimension of the recommendation system, the basic question is what a person is doing with a given recommendation, i.e. whether a person buys something, listens to music, hangs out with friends, or something completely different.

We will take as an example a person who listens to music. That person does not want to have a break of a few seconds at the end of each song to be informed that there will be a change of song and that the person should choose one of the songs offered.

This would be extremely frustrating, so recommendation systems like this don't do that, but if they know we want to listen to new songs the system automatically plays something we haven't listened to before, but we might like it. In this case, the music is not interrupted by any notification, i.e. a list of recommendations, as would be the case with the recommendations of certain products, people on social networks, etc.

Whose opinions are involved in making recommendations

All recommendation systems must essentially be based on someone's opinion, judgment, sometimes the system is based on the opinion of a particular user who uses the system, however, in most cases, other people's opinions are included. In certain systems, these are the opinions of experts, sometimes they are the opinions and evaluations of all people who have contact with the system, and sometimes these are the opinions of only people who have similar preferences as the observed user.

Systems that include the opinions of other people, but which are most similar to us, are frequent recommendation systems, and they, based on our preferences, filter other users and suggest things or objects that these people have rated positively.

Level of personalization

Until recently personalization was not present on the Internet at all. All users received the same results, regardless of their preferences. However, in the last decade, things have changed a lot. Data on all users, site visitors is being collected, recorded, and analyzed. Based on this information, the visitor is now offered personalized information, products, or services. One of the most used levels of personalization is personalization that targets a specific group of people. For example, some products will be recommended to the female population, some other products to the male population, and something completely different to those younger than 15 (children).

The next level of personalization is based on the activities of users in recent times, i.e. if a user is looking at a book and wants to buy it, the recommendation system will offer him other books that are similar to the one being observed, because those books might also be liked by the user.

There is also a level of personalization that uses information about what the user has been persistent in. For example, we can take a user who bought more albums from the same singer. When that user appears on the page, the recommendation system will suggest or offer him a new album of that singer, if there is one, or one of the old albums that the user has not bought yet.

Privacy

The Internet is a place where we can find information about everything and everyone. Information about us is mostly the information we have posted on the Internet, through social networks, forums, or our own websites. However, the amount of information about

us is much greater than we think. Today, almost all sites collect data about their visitors and store it in their databases.

This approach worries many people, i.e. they want to know what all these systems want and they want to know about them. People want to have control over the information that is collected about them. They also wonder, do such systems need to know who the person using it is, or can it be used anonymously? The problem that worries users is whether all this information collected by the recommendation systems will always remain completely private, i.e. whether there is any possibility for it to go public.

Some systems, or pages, have a "Privacy" section where the user can limit the system and decide which information the system wants to collect and which it does not.

How credible are the recommendations?

This aspect of the recommendation system is extremely important, and it largely determines how effective the system is. Problems that arise with the credibility of recommendations are sometimes subjective. Here we can take for example an online site that recommends movies based on the ratings of other people who have watched that movie. It is a common situation in which all new films have high marks. And researching this phenomenon has shown that new films always have high ratings in the beginning, because the first to watch these films are people who are big fans of such films, and often can't wait for the premieres, so they usually always give high ratings. As time goes on and as the audience expands and begins to include various profiles of people, average ratings begin to gain more realistic values.

User interface

Recommendation systems also differ in the way they display results and the way they collect data from users. This primarily refers to the user interface. The system of recommendations can be such that the user is directly asked what he likes, i.e. what he wants to find on the page, and how much he wants on a scale (from 1 to 5, etc.), but also the system can indirectly collect user data from previous use and visits to the site, and to give certain recommendations without any direct question.

In some cases, the user interface may contain a section for giving the user an assessment of the given recommendations, i.e. feedback. The user can give an assessment of whether this is what he actually wanted or was not satisfied with the results offered. All of these are different user interfaces that recommendation systems may have and differentiate by.

Algorithms on which the recommendation system works

The algorithms on which the content is filtered and the results and recommendations are presented are what determine these systems. In the last 20 years, they have been constantly improved, in order to give as accurate results as possible for the growing number of data being processed. Also, the type of algorithm, i.e. the data mining method that will be used, depends on the type of problem, i.e. the area for which the recommendation system is being implemented.

There are three most commonly used algorithms:
1. Without personalization
2. The second one is based on filtering the content
3. Collaborative filtering

Algorithms of the recommendation system

The recommendation systems are based on techniques and methodologies of related fields such as HCI (Human-Computer Interaction) and IR (Information Retrieval), however, they all rely on certain Data Mining algorithms. (Amatriain et al., 2011)
As the process of data mining can be observed through three phases, the process of obtaining recommendations from a particular data set will also have the same phases. The three basic steps, i.e. phases that occur in the process of data mining are:

1. Data preprocessing (data preparation)
2. Data analysis
3. Interpretation of results

Recommendation systems go through all the above phases in their work and use various methods and techniques. The most commonly used data mining methods are data classification and grouping, stable decision methods, methods of finding the "nearest neighbor", methods of finding association rules, neural networks, and several other specific methods and techniques are also used. These methods and techniques significantly depend on the type of recommendation system, i.e. of the algorithm used.

Recommendation systems without personalization

This type of recommendation system uses information obtained from the "outside world", ie from a large number of people who have given their opinion on a particular object (item). It also uses a large amount of information that it receives from users based on their actions. There is data on the number of books sold, books that sell best, what is currently the most popular, and so on.

Such systems recommend to the user objects that most people consider good or attractive to them, regardless of the user's gender, age, etc., because these systems do not collect information about a particular user, but only have cumulative data related to objects observed and analyzed.

An example of such a system is a website that offers information about hotel accommodation. If we apply a general model to such a recommendation system, we will get the following. User in the model will be all visitors to the site, each hotel will represent one object, and the rating will be represented by stars (from one to five), which each visitor can give to one of the hotels.

It is easy to see that this is the simplest system, i.e. a system that does not take into account any additional parameters, but only the average of all ratings given so far for a particular hotel. This kind of system is useful, but it is still largely inaccurate. This is because different people have different parameters when evaluating something, and this system does not take that into account. For some, the most important thing is what the restaurant in the hotel is like, while for others, the view from the room, i.e. services, etc. is important. All people will give ratings related to their view of the hotel in question or their

preferences, but this does not mean that their opinions and preferences will match the expectations of other users.

Content-based filtering

The recommendation system that works on the principle of content filtering analyzes sets of documents and descriptions of objects (items) previously evaluated by the user, and based on that builds a model or profile of his interests, (all based on ratings given by that user objects). With this type of recommendation system, users rate objects, and the system based on that creates a user profile according to attributes, i.e. values given to objects. The user profile represents all the information about the user's interests and preferences, and the system uses it in the process of selecting recommendations.

If we apply such a system that gives recommendations based on content to a general model, and for example take a website for recommending movies, each object will be a movie, unlike a recommendation system without personalization, in this case, each object will have attributes (genre, actor/actress, director, etc.). Of course, with this system, every visitor to the site is a user in the general model. We will take for example that a user gives a good grade to a science fiction film, while romantic films are given a bad grade, the system concludes that the user is a fan of science fiction films, while romantic films are generally disliked, and this is recorded in his profile. User profile updates do not mean that the system remembers movies that the user considers good, but there are attributes of a particular movie for which the user gave a good rating. The user profile contains a table with key vectors, in this case, science fiction, action, director, and all the other attributes that describe this film. In this way, the user is marked with some keywords related to the attributes of the object, in this case, the movie, which contains ratings. This allows the user to "get to know", i.e. the system "learns" about the user (whether he likes a certain actor, genre, etc.). These grades are most often represented in the system by values from -1 to 1.

When the system recommends a movie to him, the created user profile will be used, i.e. the attributes it contains and he will compare them with other movies. The greater the number of similar attributes, the greater the chance that the system will recommend to the user a movie that he has not yet seen, and that he might like.

Collaborative filtering - filtering based on cooperation

The basic idea is that an object (item) will be liked by the user, if that object is liked by another user, i.e. other users, who have a profile similar to the observed user. Collaborative filtering overcomes some of the problems that content-based filtering has.

One of the problems that can be overcome is the recommendation of objects that have attributes for which there are no comparative values in the user profile. Here, the system can "use" other user profiles, similar to the observed user profile, and which have certain prices for these attributes. Another important fact is that collaborative filtering relies on the quality of the object evaluated by other users, i.e. it does not rely only on the content (attributes) of a particular object, because that is often not the right measure. From this, we see that, unlike content-based filtering, can very often recommend an object of very different content, because similar users have marked it as good.

Image 1 - Collaborative filtering

If we look at one of today's largest online stores, Amazon.com, and look for a specific book, at the bottom of the screen we'll get a recommendation for some other books with the message "Customers Who Bought This Item Also Bought". The collaborative way of filtering for its results needs data about other users, i.e. products (in this case books).

The problems that occur when finding such users, i.e. products, are the large number of data that such systems have, so it is necessary to extract only those that represent the best "match" from millions of data, i.e. which are best suited for the producer.

In the case of a new user n which the system still has no information (already purchased products, comments, and ratings of products, etc.), or situations where you have added the product, which no one has yet assessed nor commented, there is talk about the problem we refer to as "cold start". This is a general problem of collaborative filtering and it is partly solved by "content-based" filtering.

Collaborative filtering still ranks as the most popular method in recommendation systems. These systems are very fast, reliable, and scalable. In collaborative filtering, there are two basic approaches or methods, namely user-based collaborative filtering and object-based collaborative filtering.

The main difference between these two systems is that the one is based on users, i.e. the user-user algorithm, which searches for "neighbors" of the user, while the object-based code, i.e. object-object algorithm, searches for "neighbors" of the object. The difference between these two approaches, i.e. the algorithm, is that the primary database that is being used. In one case it's the user database, and in the other, it's the object database. (Ricci, Rokach and Shapira, 2011)

Which of these two approaches are used, in many cases, depends on the size of the user database, or objects database. In typical commercial solutions, where the user database in the system greatly exceeds the object databases, an object-based method is used. The results of these systems are very accurate and require less frequent updates. On the other hand, the user-based method gives more original recommendations and usually provides better customer satisfaction.

Conclusion

Through their historical development, recommendation systems have gone through various forms and models, used various techniques and principles, all with the aim of obtaining the best possible results, i.e. user recommendation. The evolution of the recommendation system went hand in hand with the development of other information technologies and in particular the accelerated development of the Internet.
The development of the internet has greatly changed people's lives, the way they think, the way they do business, relax, and so on. The Internet has connected people in many ways. This does not include social networks such as Facebook, LinkedIn, and similar platforms. On platforms like this, people connect consciously and visibly, however people are connected in an invisible way.

Image 2 - Content-based filtering

CONTENT-BASED RECOMMENDATION

OBJECTS   USERS
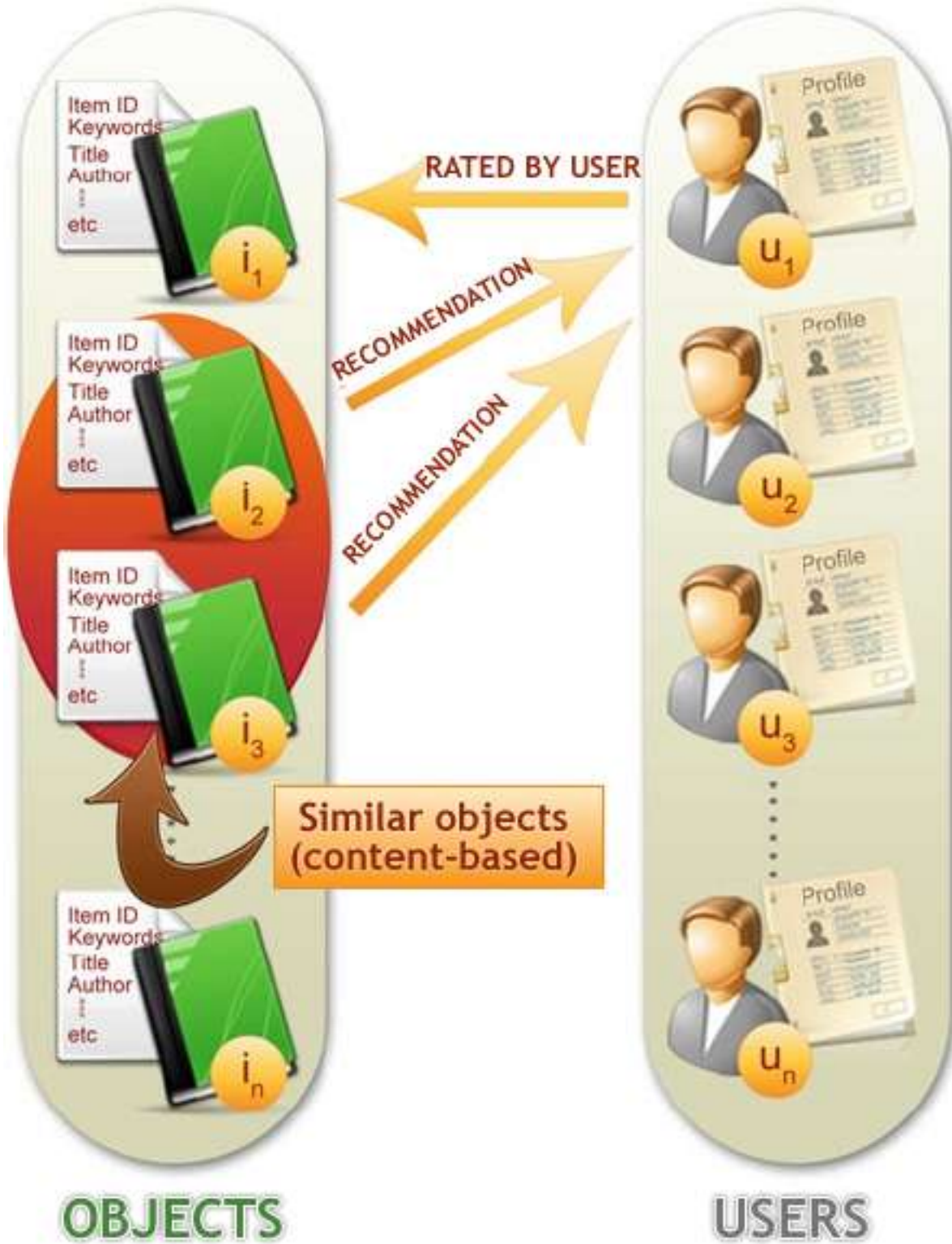
All people in the world, of course, those who use the internet, are connected with other people in databases of large and small companies, web portals, online bookstores, and the like. All companies that have implemented some of the recommendation systems on their website, constantly collect information about all visitors and users of the site. All this data is used to connect people, and each of the users on that page has a "neighborhood", i.e. neighbors, without probably even being aware of it. This is not mentioned in any negative context, moreover, all this data is collected in order to increase user satisfaction. Linking users to "neighborhoods" based on their preferences and affinities, all based on tracking their behavior on the page, shopping, search terms, etc., allows recommendation systems to use other users' opinions when filtering results for the observed user. Such systems work very well and give excellent results. However, techniques and technologies are still evolving and offering new possibilities.

When we consider new technologies, primarily the development of mobile devices, smartphones, and tablets, we come to a new dimension that has not yet been implemented in recommendation systems. I'm talking of a new area that is being worked on more and more and that will soon be implemented in many information systems, and that is the "environmental awareness" of users (Context-Aware Computing).

The context in which the user is located is something that is being worked on a lot and that is increasingly wanted to be used in the IT world, all with the aim of better customer satisfaction. Under the context, i.e. the user environment, many things can be considered. Let's take the example of a user who is at a bus stop. Smartphones have already been made which, based on the user's environment, detected by his location, i.e. the input on the microphone in standby mode (when not talking), automatically amplifies the ringtone. This is one simple example of context-aware computing, where a device takes the user environment as a parameter for some decisions. In this case, the mobile phone, automatically, without any user action, change the settings in its system, so that the user is able to hear the incoming call.

Lately, many websites have been asking for permission from users to allow the use of user location information. All this is to acquire knowledge about the user's context, in this case, the location, which is only one aspect of knowledge about the user's environment. Furthermore, this information about the user and his environment may include the device on which the user is connected and active (smartphone, PC, tablet).

This principle and model could be implemented in recommendation systems and greatly improve the results that these systems give. Recommendations would be, not only personalized for the user, but also his current environment. Recommendation systems with an additional dimension of the environment would be able to offer different products and services to the same user, depending on the current environment and the situation in which the user is. The point of this recommendation system, which would take into account the environment, i.e. the state of the user, is that the system could make such recommendations based on all the information available.

Recommendation systems with the element of awareness of the user's environment will be advancing alongside the development of technologies that allow obtaining more information about the user. This refers to information about his environment and even his condition (whether he is happy, tired, etc.). Such technological systems are intensively developed and their application will lead to obtaining a very true picture, information about the user's environment and his current condition, his current activities, desires, etc.

References

Ala A., (2013) Recommender System Using Collaborative Filtering Algorithm, Technical Library, USA

Amatriain, X., Jaimes, A., Oliver, N. and Josep, M., (2011) Data Mining Methods for Recommender Systems , Recommender Systems Handbook, Springer, p. 39

Resnick, P., et al, (1994) GroupLens: an open architecture for collaborative filtering of netnews [http://dl.acm.org/citation.cfm?doid=192844.192905]

Ricci, F., Rokach, L., Shapira, B., (2011) Recommender Systems Handbook, Springer, USA

The Nigerian Housing challenge

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Abstract

Housing all over the world has remained an interdependent phenomenon that affects every part of human endeavour.

Housing has been universally acknowledged as one of the most essential necessities of human life and is a major economic asset in every nation. Adequate housing provides the bedrock for stable communities and social inclusion (Oladapo, 2006). Konadu Agyemang et al (1994) have established a strong correlation between housing ,good health , productivity and social economic development. Abraham Maslow's Hierarchy of Needs also groups shelter(housing) as part of safety needs. The import of housing is so pronounced that it impacts the social , physical and mental wellness of man irrespective of his social status , colour or creed.

In spite of the importance of housing to mankind , there is however a shortage of needed housing units relative to supply in most developing countries including Nigeria where the population growth rate and urbanization are rapidly on the surge – there is a huge delta between housing demand and corresponding supply in most major Nigerian cities.

Introduction

A united Nations study revealed an estimated normative figure of 323 million for the entire world between 1970-1980. The developed countries required 90 million units whist the rest of the world required 233 million . It is against this backdrop that delegates to the 1976 United Nations Conference on Human Settlements in Vancouver Canada demanded a paradigm shift and a more radical and pragmatic approach on housing policy reforms and implementation with a view to address the hydra-headed problem particularly the dire concerns of developing countries . The housing policy reform was expected amongst others have a strong political and financial will by governments to enable housing inclusion amongst the poorest and most vulnerable citizens globally . In Nigeria , like many other developing countries , this programme has not been effectively implemented since the 1976 delegates' conference.

Nigeria has witnessed a litany of failed attempts at addressing the myriad of problems confronting housing especially during the era of military dictatorship spanning the 1960's and 1990's . In a similar vein , the civilian government that came into existence in the 1990's inherited a serious problem of housing inadequacy resulting from years of neglect, undeveloped housing finance system , limited long term funds , high interest rate on mortgages , high cost of land ,building materials , poor planning of housing policies and programmes and administrative bottlenecks which make processing and securing building approvals, certificate of occupancy and other necessary government permits very difficult and the unmitigated corruption in the allocation of government lands within the framework of the Land Use Act , Cap 202, LFN1990 (Ogwu, 2006, Akomolede , 2007 and Onyike, 2007).

The problem is further compounded by the high incidence of corruption in other key sectors of the Nigerian economy and the absence of political will by successive governments to deal with the peculiar housing conundrum .

There is also the challenge of conflict of interest amongst key stakeholders-mainly the funding institutions , developers and the end users .The profit maximization drive of developers and funding institutions tend to conflict with the affordability aspect of housing consumers especially the low income earners (Draft Housing Policy , 2004) with the government which is ought to play an active role in boosting housing provision in the country .

The current population of the country is estimated at over 140million (National Population Census, 2006)   and still increasing at a growth rate of 3.2% as a result of which the country has a very large and incremental housing deficit which stood at 8 million housing units in 1991 and between 12 to 14 million housing units in 2007(Akeju , 2007, Aikhorin , 2008) while a more recent estimate put the figure at circa 17 million (according to Olusegun Adeniyi of Federal Mortgage of Nigeria   cited by Sombo, 2007, Uroko and Akintola , 2008) . At an average cost of N2.5million per housing unit , the country would require a whopping 42.5 trillion Naira housing deficit of 17 million units.

Background

Affordable and sustainable housing is a right for all citizens .It is also viewed as a key indicator for sustainable development in most communities . Generally sustainable development is grouped into three sections ; social , economic and environment.

From the social perspective , housing does not only provide shelter but also offers a sense of protection to a community . Home ownership is also a morale booster that enhances an individual   or family's social status . From an economic perspective , the developing of housing units generates significant contribution to the construction industry sector and leads to increase in Gross Domestic Product (GDP) year by year. From the environmental lens, housing should be liable to reduce the negative aspects of green house effect and carbon sink , optimize energy usage and efficiency , materials and waste management. As population continues to increase significantly in Nigeria , the demand for housing for particularly those in the low and medium bracket continues to surge. It has therefore become problematic   for these group to own affordable houses on sustainable basis . Houses should be built and equipped with all the ancillary facilities.

Literature Review

According to the United Nations- Habitat (2007), the vast majority of the world's people live in city slums- slums , squatter settlements and homeless people are growing . The majority can be found in Sub-Saharan Africa such as Nigeria.

In 1996, the United Nations had put the global urban population at circa 60 million between 2001 and 2012, this figure increased by one and half percent .In Sub-Saharan Africa which is largely rural, only 33 percent of the population live in urban areas. There is a very high population growth rate of up to 4 percent. According to Enisan (2007), the rate of urbanization in Nigeria has been on the increase in the last two decades . Okupe(2002) noted that in the 1930's only 7 percent of Nigerians lived in the urban center and 10 percent in the 1950's but by 1970, 1980 and 1990, 20 percent , 21 percent and 35 percent

lived in the cities respectively. However, in recent time, over 40 percent of Nigerians now live in urban centers of varying sizes, this has created severe housing problems resulting in overcrowding, inadequate dwellings and in a situation in which 10 percent Nigerians are said to be homeless (Enisan , 2017). This has created intense pressure on social services and urban infrastructure such as transportation , electricity , potable water supply and health services . The rural -urban drift and migration towards urban settlements in Nigeria have resulted in over population and constraints in major cities like Lagos, Ibadan, Kano and Port Harcourt .

According to Abrams (1964) and Jiboye (2011) and Amao (2012) , the growth pattern in the urban centers has outstripped the capacity to maintain acceptable standards of public health , physical infrastructural development, environmental safety and healthy living environment and government's ability to provide services for sustainability . This has undoubtedly impacted housing quality adversely. Additionally , housing stock in Nigerian cities are grossly inadequate and the corresponding urban population has resulted in uncontrolled overcrowding and unplanned settlements culminating into settlements ill-equipped for human habitation especially in large cities like Lagos and Ibadan.

In addition, there is a nexus between housing and poverty, Nigeria's poverty level rose from 46.3 percent in 1985 to 65.5 percent in 1996 and 70 percent till present with over half of Nigeria's population living below the poverty level of US $1.00 per day . Within the context of poverty level, affordable housing is both inaccessible and unavailable for the majority of the urban poor (Lagos state report, 2004),

In the past, in recognition of the global housing need and consequent homelessness in most countries , the United Nations Center for Human Settlement (Habitat) had inaugurated a World Habitat day in 1987 with the theme "Shelter for the Homeless". The central thrust of the discourse was a deep-dive on the plaque of global poverty and homelessness and to encourage various national governments to pay rapt attention to alleviate the needs of the citizens (United Nations Center for Human Settlement, 1993).

According to Mabogunje (2004):Ezegwe(2005) in Nigeria, Ezegwe et al (2015) , the existing housing stock is 23 per 1000 inhabitant and housing deficit of between 15-17 million while 12 trillion will be required to fund 15 million housing units . The Federal Housing Authority(2007) noted that this is about four times the annual national budget of Nigeria.

As part of Nigeria's national development plan , all citizens are expected to have access to relative decent and affordable housing .

In the light of the foregoing, the country initiated and established a National Housing Policy with the aim of providing an institutional framework for ensuring adequate housing with quantitative and qualitative (Adeshina and Idaeho, 2019). In spite of these efforts , no significant success has been made to meet the housing needs of the growing population in Nigeria (Jiboye , 2011, Emediafe, 2015, Adeshina and Idaeho, 2019), every individual needs housing, thus housing is a significant component of the social dimension of sustainable development in Nigeria(National Affordable Housing Association , 2016). However, a large population of Nigerians still live in sub standard makeshift dwellings. Thus , there is need to ensure decent and affordable shelter to the people , especially urban poor is integral to the improvement of their living standards and a panacea for sustainable housing in Nigeria.

The main thrust of this paper is to identify the major challenges and prospects towards achieving affordable and sustainable housing in Nigeria .

Sustainability in Affordable Housing Provision

The term affordable housing can be described in different context . It refers to any type of housing (market or non -market provided) that is rented or purchased at a price that is not beyond the financial capacity of a household .

Definition of housing cost typically include expenditure on rent or mortgage payments on rates , property taxes , household , insurance, repairs and maintenance where these are the responsibility of the resident . Other costs which may be related to housing such as utility payments are considered by some but not all researchers regard them as costs (Gabriel et al , 2005).

The notion sustainability is very broad and used in different ways by different researchers . The World Commission on Environment and Development   defined sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs (WCED1987, P.8). In the context of housing , Pruemius (2005, p.5) defines sustainability as the minimization of negative impacts of housing development on the environment as well as social impacts . Yates et al (2008, page 8) takes a system view point , defining a sustainable housing system as that which is fiscally sustainable and allows successive generations to gain access to appropriate and affordable housing . In business literature , the concept of triple bottom line is defined as an approach which measures successful projects and organizations by not looking at the financial bottom line but also the social and environmental impacts of their activity (Norman and Mc Donald , 2004, pg 243).

Key Findings and Strategies for Addressing Gaps in Nigeria

Nigeria is presently confronted with a large deficit of housing requirements , a very high occupancy ratio in most cities , lack of basic infrastructural facilities such as potable water supply , solid waste management amongst others . An assessment of sustainable housing provision in the country over the years according to Chukwujekwu (2006) is constrained by the critical issues highlighted below:
1. Escalating cost of building materials
2. Lack of access to low interest housing finance and bridging finance on case-case basis.
3. Lack of rebate for imported building materials
4. Low purchasing power parity emanating from low emolument by public servants
5. Lack of political will and commitment by successive governments
6. Total absence of some tiers of government and institutional investors in housing delivery .
7. High profit driven mentality by private developers
8. Access to Land and legal bottlenecks
9. Apathy towards the use of alternative building materials and underfunding of housing research institutions
10. Lack of public infrastructure by all tiers of government to encourage and create the enabling environment for housing delivery
11. Corruption and overpricing of contract sum for public housing projects .

12. Poor planning indicators leading to abandoned housing project in some urban and peri urban locations .
13. Land banking and speculation
14. The need for land reform and advocacy to engender housing sustainability .

In order to consciously and intentionally address the housing gaps , the following issues need to critically re-evaluated as an opportunity:

Building Materials for housing construction

Most building materials used in home delivery are import dependent .Though cement factories operate locally , they also increase prices regularly because of raw materials that are imported which foreign exchange component. The country   continues to face headline inflation which ultimately affects the prices of building materials adversely .

It is regrettable that local building materials such as burnt bricks and other roofing materials are not patronized by end users . The apathy and low patronage results in high production cost since there is no competition to achieve economies of scale.

Land Reform and Advocacy

The national land policy , Land use Act which was promulgated in 1978 during the military era with the strategic intent of enabling land accessibility to all Nigerians has ended up becoming an albatross and not an enabler. Stakeholders and built environment professionals continue to agitate for the review of the extant law. The law was put in place to streamline the diverse land tenure system across in the country by vesting the ownership of the land to all lands in the Governor(Power of Eminent Domain) and the Minister of the Federal Capital Territory for the purpose of sustainable land management and administration .

However, the contentious issue of Governor's consent for any subsequent transaction on land the intractable bureaucracy and other administrative bottlenecks significantly make land acquisition significantly expensive in most urban neighborhoods.

Housing Funding Model

In many parts of the world , most especially the developed countries , the major source of funding is from government , individual savings , life insurance and pension reserves , commercial banks , primary mortgage institutions , building societies , institutional investors , thrift and loan cooperatives .

However, in Nigeria, the main source of finance is through the personal savings of individuals and a few multinational corporations . Private enterprises also continue to contribute their margin , albeit in trickles . The bulk of the housing stock across the country are constructed by private initiative and individuals who invest in housing for rental income or leverage on the build to sell model. It is common to embark on piece meal construction approach or outright purchase of off -plan or finished homes as against mortgage lending .

Commercial banks , insurance companies and other institutional investors have not played significant housing delivery in Nigeria. The Nigeria mortgage system is still underbanked

by prospective home - owners when compared to some countries like United Kingdom, South Africa, United States of America , Canada and countries in the European Union.

In Nigeria, insurance and pension companies have not forayed into housing development schemes in spite of having access to long term funds .

There is need for total re-engineering of the Federal Mortgage Bank, the National Housing Fund and the integration of the primary mortgage institutions into the activities as a special purpose vehicle for housing delivery .

There is need for the reduction of interest rates on mortgage loans in the monetary policy guidelines moderated by the Central Bank of Nigeria in order to drive competitiveness and financial inclusion that can be channeled towards increasing the housing stock.

Housing Research

Nigeria's economic complexity index is alarmingly poor(134 out 137 countries ranked globally), there is a connect between economic complexity and research in housing especially in the area of developing local technology , transfer and investment in the research of alternative building materials that are produced locally .

Nigeria's research and development initiatives would require glocalization – adopting global best practices towards developing local home grown solutions premised on research , capacity building and migrating knowledge.

Transparent data   for planning purpose is also required . Professional bodies such as Estate Surveyors and Valuers, Architects, Builders, Quantity Surveyors   and Town Planners and the academia need to form a housing research Think-tank with   building materials research institutes and constantly establish models for costing   and materials standardization to drive efficiency and boost productivity of the housing sector.

Housing Laws

Most states in Nigeria currently experience legal restraints which does not engender rapid development . The country's law is   enshrined in the land use act . Land titling and documentation and the implication of the country's proprietary interest as being practiced differs from local traditions in -country . Building laws and development control provisions are designed and enforced in such a way that they inhibit housing construction .

Legally and economically , the mortgage instruments in operation in the country are still very convoluted making access to funds   very challenging . The laws need to reviewed and amended to be more solution driven.

Housing cost and the Minimum Salary Debate

There is a significant disparity between housing cost , building materials and the minimum wage earned by public servants working for government and some workers in the informal sector. While the average   headline inflation is circa 17 percent (National Bureau of Statistics, 2021) and continues to affect disposable income and purchase power parity , the minimum wage is still US $78 per month . Most states in Nigeria have refused to pay, some are drawn in protracted labour disputes with labour unions .

The narrative above makes access to affordable housing almost beyond reach.

The introduction of the National Housing Fund over two decades ago has not empowered most Nigerians to own houses of their own due to conditions precedent to the accessibility of the fund .One of the conditions is for prospective loan applicants to have saved at least 25 percent of the total cost of the house desired . This will remain an illusion with the minimum wage quagmire. Thus, addressing the problem of accessibility would require the review of the National Housing Fund to achieve impact penetration as a housing intervention model that bridges the gap between savings and borrowing .

Housing Education

It is important for stakeholders to be knowledgeable in the housing value chain. Primarily , it ensures there is a common purpose and opportunity to build strategic synergy that will ultimately engender sustainability . It will ensure that key actors are familiar with the economic , legal , political and regulatory and governance structures controlling the housing industry and the market. The education and enlightenment platform transcend orthodox training , it entails understanding the dynamics of the art and science of living the home and community .

Inclusion

Socially inclusive housing is located in sites that provides residents with sites with good access to transport as well as local amenities and services .It provides residents with a voice in decisions that their homes such as facility management . Inclusive forms of affordable housing should provide opportunities for social connections and interactions across cultural and socio-economic differences .
Being socially and economically connected means access to jobs , services nd social networks (Hayes et al, 2008). One of the overarching objectives of increasing the supply of well situated   affordable housing is to improve such access to tenants as well as respond to labour shortages on low-medium paid jobs in locations (Berry, 2008).

Public Private Partnership

A public-private partnership is a cooperative arrangement between two or more private sectors typically of a long tern mature(Wikipedia.org), The seemingly advancement of the PPPs as a concept and practice is a product of the new public management of the late 20th century and globalization pressures . It has been used in several countries to deliver successfully in the delivery of infrastructural projects – schools, hospitals , railways , roads amongst others . It is increasing finding space in the construction industry and increasing used to drive mass housing .

In Nigeria , the Private Public Partnership in most cities is still at infancy , it will be a useful tool to boost the housing stock where government is able to use efficiently the power of eminent domain to acquire land for overriding public interest and institutional or private developers contribute funding and   project management expertise to deliver housing projects at affordable prices to low and medium income earners based on Joint Venture Memorandum using a special purpose vehicle in most instances .

Conclusion

This paper has reviewed literature on the housing gap in Nigeria which continues to impede affordable and sustainable housing . The study identified the housing conundrum from key findings and highlighted opportunities and prospects that will reshape the housing situation and engender sustainability. It justifies the urgent need and attention for land reforms, review of existing funding interventions and financial inclusion , legal instruments supporting proprietary ownership, investment in sustainable alternative local building materials to mitigate import dependency amidst scarce foreign exchange and the need for deeper collaboration that can be achieved through Public -Private Partnership especially in most urban settlements .

References

Jiboye AD . Achieving Sustainable and Affordable Housing in Nigeria . A Critical Governance . Int.J Humanit.Soc. Science 2011, 121-127.

Olotuah, A.O, Aiyeku , A.O. Sustainable Low- Cost Living Provision in Nigeria. A Bottom - up Participatory Approach. In proceedings of the 22nd ARCOM Conference Birmingham , UK 4-6 , September, 2006, Association of Researchers in Construction Management , Birmingham, UK, 2006 pp.633-639.

Amab, J, Ronita, B, Sayantami, S, Vaibhav, K, Framework to Access and Locate Affordable and Accessible Housing for Developing Nations . Empirical Evidences from Mumbai. Habitat Int. 2016, 57, 87-89

Afolabi, A. Housing Affordability As A Factor In The Creation of a A Sustainable Environment In The Developed World. The example of Akure , Nigeria.HUM.Eco, 2011, 35, 121-131

Jiboye AD (2011). Achieving Sustainable Housing Delivery in Nigeria: Critical Challenge to Housing Africa 2013, Abuja, Nigeria, 14th August, 2013.

Oladapo ,F.O and Oni OJ (2012). A Review of Selected Macro Economic Factors Impacting Building Materials Prices in Developing Countries – A Case of Nigeria. Ethiopian Journal of Environmental Studies and Management 5(2), 132-137.

Abrams C(1964). Man's Struggle for Shelter in an Urbanizing World. Cambridge MIT Press

Amao F. (2012). Housing Quality in Informal Settlements and Urban Upgrading in Ibadan , Nigeria.

Ajanlekoko, J (2001)- Sustainable Housing Development in Nigeria- The Financial and Infrastructural Implication . International Conference on Spatial Information for Sustainable Development , Nairobi, Kenya.

Enisan G(2017) , Effect of Accommodation Pressure on Housing Affordability in Ikeja, Lagos, FUTY Journal.

Emediafe W (2015) , Housing in Nigeria, why we desperately need 17 million more homes. Sapient Vendors Limited

Ajeniyo B, (1994) , The Metropolitan Area of Ibadan : " As growth and Structure" In : M.O Filani , F.O Akintola and C.O Ikporukpo (eds)Ibadan Region , Rex Charles Publication, Ibadan, Nigeria.

Firm specific and macro-economic determinants of capital structure

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Abstract

The interdependency between capital structure (financing decision), profitability, and ultimately the going concern of firms either financial and non-financial has ripple effect on the overall economy and this has made it imperative for finance experts and academic researchers to continue to dig deep into its influencing factors to scientifically contribute to this ever topical and germane issue. This study examined the firm-specific and macro-economic determinants of capital structure of financial and non-financial firms listed on the exchange. The study obtained data from eighteen (18) financial firms and forty-four (44) non-financial firms for the period 2010 and 2017. The study employed the panel fully modified ordinary least square method after carrying out the stationarity test and test of cointegration. Findings from the study revealed that earnings per share, liquidity, firm size, and revenue growth are the key firm-specific determinants of capital structure for both financial and non-financial firms are. The paper also found that macroeconomic determinants of capital structure for non-financial firms include real effective exchange rate and banking sector development while that of financial firms are GDP growth rate, inflation, and real effective exchange rate and banking sector development.

Keywords: Capital Structure, Firm Specific, Macroeconomic, Financial Firms, Non-Financial Firms.

Background of the study

Firm's efficiency and capital structure in corporate financial parlance has been extensively deliberated upon, due to the significance capital plays in the continued progress and existence of firms. Odi Nwankwo (2014) elucidates the adequacy of capital structure is not only important to the growth and survival of firms but to the economy at large. He further reinstated that a county's financial system can achieve its aim seamlessly if the firms achieve optimal capital structures which are optimally utilised to promote economic growth and development.

This intertwine relationship which exists between capital structures, firm efficiency and overall economic growth, made capital structure in corporate finance to remain a topical issue for both finance managers and academic researchers. Aiyoub, Melati, Saudah, and Agha (2013) bring to bear that the capital structure is the combination of debt and equity but with priority over one another in order to have an appropriate mix for a firm to carry out its operations in achieving optimum maximization of its value and consequently its shareholders' wealth. They further reinstated that the capital structure (financial decision) is not limited to determining the right kind of finance, but also choosing the best overall mixture of these funding options to run the business optimally.

Besides, Ahmad, Abdullah and Roslan .2012, Ndulue, Ekechukwu & Opusunji, 2019 argued that financing decision is at the core of financial management with the

responsibility to determine the optimal level of capital structure essential for a firm's operation, growth and value maximization. Sayanolu, Olagunju and Ogunmefun (2018) explained that the decisive choice of optimum capital structure (mixture of debt and equity) in carrying out the firm's operation and productively remains one of the most difficult and laborious decisions to be made by finance managers saddled with the responsibility of maximizing the firm's value and shareholders' wealth. Acaravci (2015), opined that a proportionate mix of equity and debt is essential to maximize the value of firms.

The unceasing and unresolved challenge posed is the ability of a firm to determine and manage the appropriate equity/debt mix which does not only enhance its profitability but also going concern. The maximization of a firm's shareholders' wealth and its going concern may be negatively impacted if a wrong mix of debt equity ratio (sub optimal capital structure) is employed in financing its operations.

At the macro level, the wrong mix of finance can hinder the intermediation role of the capital market and consequently negatively impact the overall economy. At the micro-level, improper finance mix can affect the efficient productivity and profitability of a firm which can ultimately threaten its survival. Girthira & Nasieku, 2015 opined that an appropriate capital structure will not only ensures firm's survival but going concern; thus adequate resources and manpower must be deployed by firms' management in taking this financing decision to ensure optimal outcome. Olokoyo (2013) stated that investors and stakeholders in the country are less aware of the significant impact of optimal finance mix on firm efficiency and value. Over the past centuries, the issue of determinant and adequate capital structure has been an on-going and inconclusive debate and academic research. Quite a number of empirical literatures have revealed that inappropriate mix of equity and debt can result in financial distress (Gupta, Srivastava, & Sharma, 2010; Pinto et al, 2017, Ikpesu, 2019).

Despite ample debate and empirical studies on the determinants of capital structure, empirical studies on firm specific and macroeconomic determinants of capital structure in the extant literature have been characterised with mixed and inconclusive outcomes. Therefore, it is imperative to put into consideration both firm specific and macroeconomic determinants of this topical issue which stands as the nexus of firm survival and social economic growth. Against this backdrop, it is of significance importance for every firm to adopt the proper use of debt, equity or a mixture of both, when structuring its capital. This study contributes to extant literature by examining the both firm specific and macroeconomic drivers of capital structure of financial and non -financial firms listed on the Nigerian stock Exchange covering all sectors encompassing agriculture, construction/ real estate, consumer goods, financial services, healthcare, industrial goods, information and telecommunication technology, natural resources, oil and gas, services, utilities and conglomerate. This will undoubtedly lead to robustness of the data for optimal and more reliable outcome for firm managers and policy makers.

The rest of the of this study is organized as follows: section two presents the review of theories and empirical literature while section three presents the econometric issues and models specification Section four presents the presentation and discussion of empirical result. Section five presents the concluding remark and policy implications.

Literature Review

Review of Theories

The finance literature over decades since the proposition of irrelevance capital structure theory of Modigilian and Meyer (1958) has witnessed vast theoretical and empirical studies. The irrelevance theory was propounded under the assumption of a perfect capital markets. However, the relevance capital theory school of thought came to address the gap and limitations of irrelevance capital theory and brought other major theories which are static trade-off theory, pecking order theory and agency cost theory.

Irrelevancy Theory of Capital Structure

The irrelevancy capital structure theory was propounded Franco Modigliani and Merton Miller (1958) on the assumptions that capital structure is irrelevant in ascertaining the value of a firm. The M & M theory opined capital structure decision is irrelevant in enhancing the value of the firm and maximizing the shareholders' wealth. This theory stands on certain assumptions which are no transaction cost, complete market information (no information asymmetry), tax-free, and bankruptcy cost-free.

Modigliani and Miller (1958) opined that the market value of a firm is determined by the risk of its underlying asset, earning power, and such autonomous in the choice of its distribution of dividends or financing of its assets. Contrarily, the cost of capital of the firm is wholly dependent on business risks and also said that a firm could choose between equity or debt as a source of finance, also spend profits made, instead of distributing earnings such as dividends to shareholders. This was five years later by introducing taxes and its associated gains (tax shield). Hence thought the optimal capital structure could be achieved by firms with the choice of debt financing, thereby contributing to the value of the levered firm. Meanwhile, increase in debt financing could predisposed a firm to bankruptcy costs or financial distress costs, as they allow their leverage to rise due defaulting on interest payments.

It is pertinent to note that this theory is relevant to this research, as it provides a non-biased view on the relationship between capital structure and firm efficiency thereby providing a neutral platform for carrying out an empirical research on capital structure and firm efficiency and the consequential effect on firm size.

According to Durand (1989), M & M assumptions are imperfect as they ignored market imperfections, institutional limitations, and the reality of transaction cost and preference for current income over the future; which has the tendency of affecting the study of capital structure and firm's value.

Agency Cost Theory

Agency cost theory was created Jensen and Meckling (1976) stating that the debt factor remains the reason for disagreement between debt holders, managers, and shareholders. According to Harris and Raviv (1990), when shareholders or debt holders prefer closing down the firm, managers always want the continuity of the firm (Harris and Raviv ,1990). Stulz (1990) argued that if giving out cash is better for equity holders, the firm's managers otherwise want to utilize all funds for investment. It is important to bring to bear that the interest of the principal and the agent are mostly different. In order for the principal to

make the agent to act in his interest, he needs to incur cost of monitoring (agency cost) which increases with the level of control. Increase in debt brings about a resultant increase in interest expense, compelling managers to invest available fund in project that will bring optimal and timely return needed to meet their debt obligations related expenses as at when due.

However, highly levered firm has low rating which increases cost of capital. An optimum debt- equity ratio that ensures reduction in agency costs in view of rising agency costs with both the shareholders and debt-holders (Muritala T.A, 2012). He further reiterated that reduction of agency costs between shareholders, managers and debt holders has been a significant issue by scholars in this field of study. Kibrom (2020) suggested that debt holders should use bond covenants to ensure reduction in shareholders' benefit in terms of dividend pay-out, investment, production and financing.

This theory is relevant to the study as it elucidates that capital structure may be adversely affected due to rise in agency cost associated with monitoring, borrowing and higher cost of capital associated with low firm rating due to high leverage.

Pecking Order Theory

Donaldson (1961) was the first person to suggest the pecking order theory while, Myers (1984) and Myers & Majluf (1984) were the major proponents who laid the theoretical foundation which elucidated that, inadequate internal funds make low profitable firms utilize debt in financing their operations while large profitable firms finance their operations internally by utilizing their retained earnings.

They proposed a hierarchy of financing decisions in the following order:

• internal funding through the profit generated by the firm
• external financing through debt issue and
• external financing through equity finance

It is pertinent to note that internal finance is more preferred by firms than external finance which is costly because capital and interest have to be repaid regardless of the firm's financial position. According to Myers (1984), firms should issue equity when they are over-valued by investors and issue debt when they are under-value. Classically, investors ensure firms follow a pecking order by not buying stocks or securities when they believe the firm's capacity of debt has been reduced drastically.

Myers and Majluf (1984) elucidated more on pecking order from asymmetry information point of view. They opined that equity has higher level of information asymmetry than debt. According to Kibrom (2010) managers have an inside knowledge of the firms worth as well as financial intermediaries, as against outside investors who require a higher premium on equity participation than debt holders due to their ability to monitor the firms operation.

On the other hand, equity finance can be viewed as a costliest source of finance because of the following expenses: registration fees, underwriting discounts, taxes, and selling and administrative costs. Though (Myers, 1984) also alluded to the rise in cost of debt due to information asymmetry but more favoured due to the benefit of tax shield despite the associated financial distress cost.

This theory is relevant for the study because it provides preference in the use of internal fund rather than external fund, to ensure the survival and stability of the firm. Continuous use of external fund threatens the stability and survival of firms, especially if these external funds are not well managed.

Static Trade of Theory

The Static trade-off theory (STT), otherwise called tax-based theory, emanated as a response to the M & M theory. The theory advanced gains of debt financing, through tax shields advantage of debt. Static trade-off theory is based on the assumption that there is an optimal capital structure. The theory posits the behaviour of a firm to successively follow a target equity- debt ratio which is influenced by the costs and benefits connected with the debt choice such as agency costs, taxes, and financial distress cost. The static trade-off theory states that optimal capital structure is achieved at the point where the investment choices and assets of the firm are held constant; while the net tax benefits of debt financing is in equilibrium with costs related to leverage, including financial distress and bankruptcy cost (Baxter ,1967and Altman ,1984).

According to Graham (2000) the deduction of interest charges associated with debt raise inducement for increased leverage to maximise the tax shield advantage, hence as the tax shield increases the firm value increases. Popescu (2009), opined that STT did not put into consideration the conventional nature of firms and different systems of taxation that exist in different countries. This theory is relevant to the study as it provides a clear understanding of how a target equity-debt ratio can enhance the value of the firm.

Review of Empirical Literature

Several studies in the literature have documented what determines the capital structure of a firm. Vox (2017), using the GMM method, examined what determined the financial structure of the emerging market of Vietnam for the period 2006 to 2015. The finding from the study revealed that the determinants of financial structure differ when a short-term indicator or long term indicators are used. The study also showed that tangibility and size determine the financial structure using long-term leverage, while tangibility, profitability, size, and liquidity determine financial structure when short term leverage is deployed. Husaeni (2018) investigated what influence the equity-debt mix of thirty firms listed in the Jakarta Islamic Index, the study concluded that return on asset, firm sizes, sales growth, and liquidity are the significant determinants of financial structure, between 2014-2016.

Hailegebreal and Wang (2018) explained what affects the financing choice of Africa firms, using a categorical analysis. The outcome of their study showed that profitability, cost of financial distress, non-debt tax shield, and tangibility are the essential firm-specific factors that determined the financial structure of African firms. The study also revealed that lending interest rate, rule of law, growth rate of GDP, banking sector development and corporate tax rate are the country-specific factors which explain financial structure of firms in African continents. The study was based on data from 254 non-financial firms in 13 African economies, between 2000 and 2015.

Anthonia (2017) investigated what influenced the financial structure of a firm that sells household products in Nigeria, between the period 2010 and 2013. Ojuye (2018) used Panel Data Least Square Regression and examined fifty Nigeria firms, between 2011 and 2016, to discover what determined the financial structure of firms in the country. Findings

from the study revealed that profitability, growth size, earnings, firm age, and inflation affect leverage positively, while asset tangibility, profitability, growth and liquidity exert a negative influence on leverage.

In addition, Sanyaolu et al. (2018), used a Panel Data Technique and examined what influenced the capital structure of firms in Nigeria, for the period 2007 and 2016. The outcome of the study showed that tangibility affects the financing mix, while profitability, growth, size, and liquidity do not affect the financing mix of firms in the country. The industry covered included oil and gas firms, food and beverages, and cement manufacturing firms using thirty firms selected from each sector.

Using the OLS technique, Anande-Kur and Agbo (2018) explored what determines the financing choice of thirty-one firms listed in NSE for the period 2007 to 2014. The outcome from their study confirmed that profitability affects equity-debt mix negatively, thus supporting the Pecking Order Theory. The study revealed that the oil and gas firms used more debt financing compared to the consumer goods, health care, basic materials, and industrial sectors. Ndubuisi et al. (2018) explained what determined the capital structure of fifteen money banks in Nigeria for the period 2010 and 2017. The research confirmed that tangibility, profitability, and bank size affects leverage positively. The methodology used in analysing the data is pooled OLS.

Using a system GMM, Apanisile and Olayiwola (2019) documented that for the period 1995 and 2015, inflation, GDP, oil price, exchange rate, investment, and corruption are the macroeconomic determinants of capital structure among firms in Nigeria. Investigating what influence debt financing in Nigeria between 2009 and 2019, Saifullahi, Yusha'u and Ahmed (2019) showed that by employing a Panel Regression method that asset tangibility, liquidity, firm size and firm growth are the key determinants of debt financing of listed industrial goods firms in Nigeria. Employing panel regression method,

In summary, from the review of the above literature, it is clearly shown that most studies report mixed findings as to what determines the capital structure of listed firms in developed and emerging markets. Whilst the majority of the studies focused on the firm-specific factors as the crucial determinants of capital structure among firms, few studies examined the macro-economic factors alongside the firm-specific factors. Moreover, while some studies confirm the existence of Trade-off Theory others reported otherwise, stating that the outcome of their study is in tandem with the Pecking Order Theory.

The review of the existing literature made obvious the mixed and inconclusive outcomes on both firm specific and macroeconomic determinants of capital structure. The vagueness in the empirical result, the mixed results and conflicting outcomes can be attributed to the endogeneity bias, measurement inadequacies, and methodological shortcomings. In addressing these obvious gaps, the study deploys the Panel Fully Modified Ordinary Least Square (PFMOLS) to obtain efficient and consistent estimates.

Also, the reviewed literatures also establish the following research gaps. Firstly, there is scanty of study investigating the determinants of capital structure of financial and non-financial firms listed on the Nigeria stock exchange covering all the sectors for a more robust data and an optimal outcome. Secondly, majority of past studies focused on firm-specific factors that determine the capital structure of firms; this study examined not only the firm-specific factors that influence capital structure but also the macroeconomic factors that determine the capital structure of financial and non-financial firms, listed on the NSE.

Data and Methodology

Source of Data

Firm-specific data was sourced from the audited financial statement of forty-four (44) non-financial firms and eighteen (18) financial firms between the period 2010 to 2017. More so, macroeconomic data was obtained from the Central Bank of Nigeria (CBN) statistical bulletin within the same period. The table 1 shows the summary measurement of the variables used in the study.

Table 3.1 Summary Measurement of Variables

Variables	Measurement	Notation
Firm-Specific Variables		
Capital Structure	Total Debt/ Total Equity	LEV
Liquidity	Current Asset/ Current Liability	LIQ
Firm Size	Natural Logarithm of Total Asset	TA
Asset Tangibility	Total Non- Current Asset/ Total Asset	ATAN
Firm Efficiency	Earnings per share	EPS
Revenue Growth	Growth in Revenue	REVGR
Macroeconomic Variables		
Inflation Rate	Percentage change of a price index over time	INF
GDP Growth Rate	Growth in GDP	GDPGR
Real Effective Exchange Rate	The weighted average of bilateral real effective exchange rates with trading partners	REXR
Banking Sector Development	Percentage of money supply (M2) to GDP	M2/ GDP

Model Specification

The study uses two models to achieve the objectives of the study. The first model examines the firm-specific determinants of capital structure while the second model examines the macro-economic determinants of capital structure.

Model 1

Based on the theory and review of empirical literature, the functional model for the firm-specific determinants of capital structure is expressed as:

(1)
$$LEV_{it} = f(EPS_{it} TA_{it} LIQ_{it} ATAN_{it} REVGR_{it})$$

(2)
$$LEV_{it} = \theta_0 + \theta_1 EPS_{it} + \theta_2 TA_{it} + \theta_3 LIQ_{it} + \theta_4 ATAN_{it} + \theta_5 REVGR_{it} + \mathcal{E}_t$$

Model 2

Based on the theory and review of empirical literature, the functional model for the macroeconomic determinants of capital structure is expressed as:

(3)
$$LEV_{it} = f(GDPGR_{it}, INF_{it}, REXR_{it}, M2GDP_{it})$$

(4)
$$LEV_{it} = 0 + 1GDPGR_{it} + 2INF_{it} + 3REXR_{it} + 4M2GDP_{it} + \square_t$$

Method of Data Analysis

The panel fully ordinary least square (PFMOLS) was deployed in analysing model 1 and 2. The technique is often employed to estimate a single cointegrating vector and provides an optimal estimate. Before using the technique, the stationarity of the variables was first ascertained after which a cointegration test was carried out. More so, the technique corrects the problem of serial correlation and heteroskedascity.

Presentation and Discussion of Result

Result on firm-specific determinants of capital structure of non-financial firms

Stationarity Test

The stationarity test for non-financial firms and financial firms indicates that the variables becomes stationarity at first difference as shown in table 4.1a and 4.1b

Table 4.1a Stationarity Test of Non-Financial Firms

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-23.66	0.0000	42	210
Null: Unit root (assumes individual unit root process)				

Table 4.1b Stationarity Test of Financial Firms

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-11.3730	0.0000	17	85
Null: Unit root (assumes individual unit root process)				
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution.				

Panel Cointegration Test

The Kao panel cointegration test was deployed in the study to ascertain if the variables are cointegrated i.e. have a long-run relationship. As shown in table 4.2a and 4.2b, the outcome of the Kao panel cointegration revealed that the variables are cointegrated.

Table 4.2b Panel Cointegration Test of Non-Financial Firms			t - Statistic	Prob.
ADF			2.752849	0.0030
Residual variance	32501.77			
HAC variance		9774.097		

Table 4.2b Panel Cointegration Test of Financial Firms			t - Statistic	Prob.
ADF			3.192175	0.0007
Residual variance	17710.66			
HAC variance		3796.459		

Panel Fully Modified Ordinary Least Square Estimate

The outcome in table 4.3a shows that among the non-financial firms, it is earnings per share, liquidity, firm size and revenue growth are the firm-specific determinants of capital structure of non-financial firms. Besides, for financial firms, earnings per share, liquidity, firm size and revenue growth are also the firm-specific determinants of capital structure of financial firms. Furthermore, the outcome in table 4.3b indicates that for non-financial firms, it is real exchange rate and banking sector development that are macro-economic determinants of capital structure of non-financial firms.

Also, for financial firms, economic growth, inflation, real exchange rate and banking sector development are the macro-economic determinants of capital structure for financial firms. The study outcome is in support of (Mishra, 2011; Ogbulu & Emeni, 2012; Idrus, Salami, & Djumahir, 2013; Umer, 2014; Vergas Cerqueira & Brandao, 2015; Ming, Rahman, &

Sannacy, 2017; Ar et al., 2018; Migliori, Maturo, & Padlone, 2018; Sudiyanto et al., 2019; Sakunashingha, Anekwasinchai, & Wiriyawit, 2018; Ali et al., 2018; Sibindi, 2018; Sahudin et al., 2019) who found that capital structure is based on: earning per share, firm size, liquidity, revenue growth, GDP, inflation, real effective exchange rate and banking sector development.

Table 4.3a: Result on the firm-specific determinants of capital structure

Non-Financial firms	Financial firms		
Dependent variables	LEV	Dependent variables	LEV
EPS	-0.039691***	EPS	-0.355225**
LIQ	-15.20377***	LOG(TA)	-4.586233**
LOG(TA)	36.10183***	LIQ	10.82927***
ATANG	-7.53E-05	ATANG	-0.026096
REVGR	-0.194719***	REVGR	3.536545***

***; ** indicates 1% and 5% level of significance

Table 4.3b: Result on the macro-economic determinants of capital structure

Non-Financial firms	Financial firms		
Dependent variables	LEV	Dependent variables	LEV
GDPGR	0.979044	GDPGR	37.70213***
INF	0.108467	INF	25.83332*
REXR	0.835652***	REXR	6.087824**
M2GDP	12.66947***	M2GDP	74.06045***

***; **; * indicates 1% and 5% level of significance

Concluding Remark

The study examines what determines capital structure among non-financial and financial firms between the period 2010 to 2017. Findings from the study revealed that for non-financial firms, the firm-specific determinants of capital structure include earnings per share, liquidity, firm size and revenue growth while the macroeconomic are real effective exchange rate and banking sector development. For financial firms, the firm-specific factors are earning per share, firm size, liquidity and revenue growth while the macroeconomic factors are GDP growth rate, inflation; real effective exchange rate and banking sector development.

Based on the outcome of the study, it is recommended that management and owners of corporate firms should consider both the firm-specific and macroeconomic factors in

deciding the firm's capital structure to achieve the optimal level of capital structure and ensure the effective and efficient utilisation and allocation of resources.

References

Acaravci, S. K. (2015). The determinants of capital structure: Evidence from the Turkish manufacturing sector. International Journal of Economics and Financial Issues, 5(1), 158-171.

Ahmadimousaabad, Aiyoub & Anuar, Melati & Sofian, Saudah & Jahanzeb, Agha. (2013). Capital structure decisions and determinants: An empirical study in Iran. International Research Journal of Applied and Basic Sciences. 5. 891-896.

Ahmad, Z., Abdullah, N. M. H., & Roslan, S. (2012). Capital structure effect on firm's performance: Focusing on consumers and industrials sectors on Malaysian firms. International review of business research papers, 8(5), 137-155.

Anande-Kur, F. & Agbo, A. (2018). Determinants of capital structure in the Nigerian manufacturing sector. Ae-Funai Journal of Accounting, Business and Finance (FJABAF), 3(1), 178-185.

Anthonia T. O. (2017). Determinants of capital structure: evidence from household products' firms in Nigeria. FUDMA Economic and Development Review, 1(3), 17-33.

Apanisile, O. T., & Olayiwola, J. A. (2019). Macroeconomic and institutional determinants of firms' choices of capital structure in Nigeria: a system-GMM approach. International Journal of Business and Emerging Markets, 11(1), 89-107.

Avcı, E. (2016). Capital structure and firm performance: An application on manufacturing industry. Marmara Üniversitesi İktisadi ve İdari Bilimler Dergisi, 38(1), 15-30.

Donaldson, G. (2000). Corporate debt capacity: A study of corporate debt policy and the determination of corporate debt capacity. Beard Books.

Durand, D. (1989). After thoughts on a controversy with MM, plus new thoughts on growth and the cost of capital. Financial Management, 12-18.

Githira, W. C., & Nasieku, T. (2015). Capital structure determinants among companies quoted in securities exchange in East Africa. International Journal of Education and Research, 3(5), 483-496.

Graham, J. R. (2000). How big are the tax benefits of debt?. The Journal of Finance, 55(5), 1901-1941.

Gupta, P. Srivastava,A. and Sharma, D (2010). Capital structures and performance: evidence from India, Dept. of Accounting Gautam Buddha, University, Greater Noida, India, Staff Working Paper.

Hailegebreal, D., & Wang, M. (2018). Determinants of capital structure of African firms: a categorical analysis. European Journal of Business and Management,10(1), 1-14.

Husaeni, U. A. (2018). Determinants of capital structure in companies listed in the Jakarta Islamic index. International Journal of Economics, Management and Accounting, 26(2), 443-456.

Ikpesu, F. (2019). Firm specific determinants of financial distress: empirical evidence from Nigeria. Journal of Accounting and Taxation, 11(3), 49-56.

Jensen, M., & Meckling, W.H. (1976). Theory of the firms: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3, 305–360.

Kibrom, M. F. (2010). The Determinants of Capital Structure: Evidence from Commercial Banks in Ethiopia (Doctoral dissertation, Mekelle University).

M'ng, J. C. P., Rahman, M., & Sannacy, S. (2017). The determinants of capital structure: Evidence from public listed companies in Malaysia, Singapore and Thailand. Cogent Economics & Finance, 5(1), 1418609.

Migliori, S., Maturo, F., & Paolone, F. (2018). Capital structure determinants in family firms: An empirical analysis in context of crisis. International Business Research, 11(4), 65.

Mishra, C. S. (2011). Determinants of capital structure–a study of manufacturing sector PSUs in India. In Proceedings of 2011 International Conference on Financial Management and Economics, IPEDR (Vol. 11, pp. 247-52).

Modigliani, F. & Miller, M. (1958). The Cost of Capital, Operation Finance and Theory of Investment. American Economic Review,48:261-297. Modigliani, F. and Miller, M. (1963). Corporate income taxes and the cost of capital: a correction. American Economic Review, 53: 443-453.

Muigai R. G (2016), Effect of capital structure on financial distress of non-financial companies Listed at Nairobi Securities Exchange.

Myers, M. D. (2019). Qualitative research in business and management. Sage Publications Limited.

Myers, S. C. & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13, 187– 221.

Myers, S. C. (1984). The Capital Structure Puzzle. Journal of Finance, 39, 575-92. Myers, S. C. (2001). Capital Structure. Journal of Economic Perspectives, 15, 81-102.

Ndubuisi, A. N., Uche, E. P., Leonard, N. C., & Chinyere, O. J. (2018). Capital structure determinants: empirical evidence from quoted deposit money banks in Nigeria. International Journal of Research in Business, Economics and Management, 2(4), 70-85.

Nwankwo, O. (2014). Effect of capital structure of Nigeria firms on economic growth. Mediterranean Journal of Social Sciences, 5(1), 515-515.

Ogbulu, O. M., & Emeni, F. K. (2012). Determinants of corporate capital structure in Nigeria. International Journal of Economics and Management Sciences, 1(10), 81-96.

Ojuye, T. O. (2018). Determinants of capital structure for quoted companies in Nigeria. International Journal of Innovative Development and Policy Studies 6(2):127-131.

Olokoyo, F. O. (2013). Capital structure and corporate performance of Nigerian quoted firms: A panel data approach. African Development Review, 25(3), 358-369.

Popescu L.& Visinescu S. (2009). A review of the capital structure theories. Research Paper

Sahudin, Z., Ismail, Z., Sulaiman, S., Rahman, H. A., & Jaafar, M. N. (2019). Capital structure determinants of Shariah-compliant Firms. Journal of Emerging Economies and Islamic Research, 7(1), 65-75.

Saifullahi, M. A., Yusha'u, K. S., & Ahmed, K. (2019). Determinants of debt financing for listed industrial goods firms in Nigeria. International journal of arts, languages and business studies, 2(2).

Sanyaolu, W. A., Job-Olatunji, K. A., & Ogunmefun, G. T. (2018). Determinants of capital structure in Nigeria.Accounting & Taxation Review, 2(3), 1-12.

Stulz, R. (1990). Managerial discretion and optimal financing policies. Journal of financial Economics, 26(1), 3-27.

Sudiyatno, B., Nugroho, S., Susilawati, Y., & Nurhayati, I. (2019). Determinants of Capital Structure. In International Conference on Banking, Accounting, Management, and Economics (ICOBAME 2018). Atlantis Press.

Taiwo Adewale Muritala (2012), an empirical analysis of capital structure on Firms' performance in   Nigeria, international Journal of Advances in Management and Economics, vol.1, issue 5

Umer, U. M. (2014). Determinants of capital structure: Empirical evidence from large taxpayer share companies in Ethiopia. International Journal of Economics and Finance, 6(1), 53-65.

Cultural and Natural Landscape of the Architect Sinan Route

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Abstract

The study aims to create a new cultural route, to map this route, to determine the cultural and landscape elements of the route. This study is limited to the works of Architect Sinan, extending from Istanbul to Edirne. After the literature review on the route created based on these sources, field study was conducted and the route was mapped. The works on the route are divided into daily tour programs, and numerical data regarding their current situation has been arranged. In this context, on the route; 173 of them were damaged by fire or earthquake. 52 of them lost their originality due to subsequent restorations. 25 of them are in ruins. Architect Sinan Route; when marked as a culture route; and one that both routes of Ottoman monuments in Turkey and in Europe will be the only example of 16th century architecture reflecting the Ottoman.

Keywords: culture, cultural heritage, cultural tourism, cultural routes, European cultural routes, architect Sinan, architect Sinan route, natural landscape, cultural landscape, tourist guide,

Introduction

Historical and religious sites, such as monuments, churches, mosques, and synagogues derived from the Turkey's long history of playing host to several civilizations and religions over centuries, are one of the most important resources of Turkey. Turkey has a thousand years of history. The Ottoman Empire constitutes approximately 600 years of its thousands of years of history. [1]

In the Ottoman history, 16th century is regarded as the turning point and rise of the Ottoman Empire. It is also the rise of Ottoman architecture. Sinan, who lived for about a century, appears before us in the 16th century. He both left his mark on his own century and influenced the following centuries with the students he educated. It is known that Sinan, who served his country as an architect for 50 years, was recruited from Kayseri Ağırnas, although the exact year he was born is not known.

Serving as a janissary for 17 years, Sinan showed his architectural skills with the bridges and galleys he built in wars and was appointed as the chief architect during the reign of Kanuni. Many discussions about the origin of Architect Sinan have continued until today, and there have even been researchers who claim that Architect Sinan is not real. He fit "314-477" works into his life. [2] [3] [4] [5] The existence of such a numerical range is due to the works written about Architect Sinan. Information about Architect Sinan has reached today through works named Tezkiretü'l Bünyan, Tazkiret'ül Ebniye and Tuhfetü'l Mimarin. [6] [7] [8] Some works built by Sinan are mentioned in three sources, some in only two and some in one source. When these numbers are added together, a maximum of 477 is reached. [9]

The sincerest information about Architect Sinan can be found in Tezkiretü'l Bünyan, written by his friend Sai Mustafa Çelebi. Tezkires are equivalent to vita texts written for Renaissance artists. [10] This book narrates what Architect Sinan

did from his childhood until his death. [11] The scope of this study consists of works in Istanbul and Edirne, where Architect Sinan left the most works. The aim of the study is to create a cultural route from Istanbul to Edirne, to determine the current situation of the artifacts on the route and the landscape elements on the route. After the literature review in this context, field research was conducted and the route was mapped with ARCIS program.

The European Cultural Route and Creating the Architect Sinan Route

The concept of cultural route is a concept that has started to become widespread in the world in recent years. Considering that future tourism preferences will change with the effect of the Covid-19 outbreak, being in nature and walking will become even more popular. The European Cultural Route is a program established by the Council of Europe in 1987. [12] 40 routes have been created in Europe within the scope of this program. The best known of these routes are the Mozart Route, which consists of houses where Mozart wrote his works, the Viking Sea Route, which can be traveled with Viking hat Viking ships, ceramic route and landscape routes. St. The Santiago de Compestella Route is a cross route as well as being the first route to be designated. The objectives of this program can be summarized as creating a cultural identity, sharing different cultures, supporting interfaith dialogue, enhancing cultural and natural heritage and most importantly enabling Europeans to prioritize cultural tourism in their spare time.

Cultural routes can be completed on foot or by bicycle or horseback. The markings of cultural routes are made with the marking of the international standard Grande Randonne, meaning safe road. In this marking, the least damage to the nature takes precedence. Marking is made on dirt roads, trees, stones, rocky grounds. The walking paths are marked with red-white marking and the bicycle paths are marked with red-yellow marking. Start signs are placed at the start of the road. When creating routes, tangible and intangible cultural heritage should be identified; geographical locations should be defined and marked within the scope of a specific theme. Within a theme, different data sets are combined into the route to create continuity. [13]

Cultural routes are classified according to their identified characteristics as follows: [14]
- According to regional scope: Local, national, regional, continental or transcontinental.
- According to their cultural content: different geographical areas within a given cultural region or sharing the process of mutual influence in the formation or evolution of cultural values.
- According to goals or functions: Social, economic, political or cultural. These features can also share a multidimensional context.
- According to temporal periods of use: those that are no longer used due to the impact of socio-economic, political and cultural changes.
- According to their structural configurations: Linear, circular, cruciform, radial or mesh.

- According to their geographical location: Land, water, mixed or other physical environments. Routes expressed linearly are defined according to linear, belt, network, cyclic and cluster spatial form.

Routes are classified with A and B theme. Theme A refers to the routes used for a specific purpose in a historical period and Theme B refers to the routes prepared for the purpose of developing tourism and preserving the concrete and intangible heritage (table 1).

The role of the European Institute of Cultural Routes in the program, which was established after the routes were regarded as assessing cultural heritage; evaluating project applications, monitoring the activities and activities of the collaborating organizations, disseminating information and archiving documents. Today there are 47 + 17 member states (council members and non-members) and 38 routes.

In this context, cultural routes have been established in Turkey and their number has increased to approximately 20. The first of these routes is the Lycian Way. Considered one of the world's top 100 long-distance hiking routes, the Lycian Way is located between the Fethiye-Antalya Gulf, known as the Teke Peninsula. [15] [16] Although there is not yet a route included in the European Cultural Route program in Turkey, studies are continuing for the Euro Asia Route.

In this study, a cultural route consisting of 60 works of Architect Sinan, extending from Istanbul to Edirne was created. The works on this route are divided into daily programs. Each day consists of a walkable route. On the first day, there is a passage between the two sides of Istanbul, so sea or road vehicles are used. Transition from Istanbul to Edirne can be achieved by buses or bicycles. This route, consisting of 60 works of Sinan, is an 8-night 9-day program. If this route is created and included in the European Cultural Route program, it will be;

- The only route with Ottoman artifacts both in Turkey and Europe,
- The only route that reflects the 16th century Ottoman architecture,
- The only cultural route with 60 historical monuments for 300 km.

In addition, the route can be transformed into an intercultural route by combining with the Via Appia route that travels through the Roman Empire.

Material and Methods

First of all, the entire route was walked by the author. Before walking the route, inventory records, information and documents related to natural, historical and cultural values in the region were obtained. Then, the locations of the values that could be the components of the cultural route and the distances between them were mapped in the GIS (Geographical Information System) environment. The paper aims that the proposed route will form a basis for a multi-component and systematic cultural route planning study to be managed by a team consisting of different fields of expertise, depending on the nature of the field.

The main material of this study is the Istanbul-Edirne section, which consists of the works of Mimar Sinan. The literature review on the natural and cultural landscape elements on this cultural route in the Marmara Region of Turkey, the reports, maps and numerical data obtained from various institutions and

organizations regarding the study area, Google Earth 2020 satellite images, photographs formed the material of the study. Photoshop CS3 and ArcGIS 10.0 programs were used to create the geographical location, natural and cultural resource values maps prepared for the Mimar Sinan Culture Route and its surroundings, which is the research area.

The aim of the study is to determine the natural and cultural landscape characteristics of the Mimar Sinan Cultural Route and its immediate surroundings. For Mimar Sinan Culture Route, which is one of the cultural routes that constitute the research subject; A literature review was conducted on the subjects that constitute the theoretical foundations and the natural and cultural landscape elements on the route. Cultural route; definition, conceptual development, common elements on the routes, classification of cultural routes, cultural route planning, examples of existing cultural routes in Turkey and Europe were also examined. Within the scope of this research, first of all, the source values of the existing cultural route were determined based on the statement of Buhalis (1999) that "The existing situation should be analyzed and defined in the best way possible in order to make a strategic planning". [17]

In order to determine the natural and cultural resource values of the research area, the location of the area, its topographic, geological structure and hydrological structure, which are natural landscape features, climatic features, documents obtained from institutions on natural vegetation and wildlife, maps and previous studies about the area were examined. In addition, verbal interviews were made with authorized persons from the institutions and information on the field was obtained. In the observation phase, survey-analysis studies were carried out on the Mimar Sinan Route. Written and verbal information was obtained from the institutions about the historical development of the area, which are the cultural landscape features, immovable cultural assets, socio-economic structure, transportation opportunities, local architecture and archaeological values, and previously prepared books and articles about the history of the province were examined. All of these are supported by observations and photographs made in the field.

Cultural Landscape of Architect Sinan Route

By scanning the resources, Architect Sinan Cultural Route was created from Istanbul to Edirne, 55 mixed Sinan artifacts and 5 aqueducts were identified and taken to the route. After the field trips, it was determined that all 60 Sinan's works can be visited. 17 of these works are under renovation and not all of them can be visited. 7 of the buildings lost their originality completely, 13 of them partially. 9 of the works are not used in accordance with the purpose of construction. As stated in the introduction parts of this study, some sources do not attribute all 477 works of Architect Sinan to himself. For this reason, the works of Architect Sinan, both in Tezkiretül Bünyan and Tezkiretül Ebniye, were included in the study.

According to (table 3), the route consisting of all works of Architect Sinan is given in (map 1).

The current situation of these 477 buildings and structures built, repaired or attributed to their name by Sinan is given below.

- It has not been determined exactly that 31 of them belong to Sinan.

- 173 of them were damaged by fire or earthquake.
- 52 of them lost their classical architectural characteristics due to subsequent restorations.
- 25 of them are just ruins.
- 196 of them are classified with forms and styles from the 16th century.

Architect Sinan mostly produced works in the style of complex structure. Considering all the works of Architect Sinan, it is possible to create a travel route from Mostar to Mecca. However, as it will take a long time to complete this road, which has different routes from each other, the Istanbul-Edirne route, where it can be more touristic and transportation, was preferred. Architect Sinan Culture Route was created from the works that Architect Sinan made on the Istanbul-Edirne route. Since Architect Sinan Culture Route can be turned into a tourism activity, a tour route for 8 nights and 9 days has been prepared. Since the aqueducts built by Sinan on this road are difficult due to transportation, they will be given as an alternative route. It is not included in the tour route. The general titles of the route to visit and the route map are as follows.

- Route 1: Beşiktaş-Üsküdar Route: Hüsrev Kethuda Bath, Barbaros Hayrettin Pasha Tomb, Sinan Pasha Complex, Kılıç Ali Pasha Complex, Atik Valide Complex, Valide Sultan Bath, Mihrimah Sultan Complex, Şemsi Pasha Complex.
- Route 2: Sultanahmet-Kadırga Route: Topkapı Palace III. Murat Room, Topkapı Palace Kitchens, Haseki Sultan Bath, Hagia Sophia West Minarets, Şehzadeler Tomb, Cafer Ağa Madrasa, Kadırga Sokollu Mehmet Pasha Complex, Rüstem Pasha Madrasa.
- Route 3: Eyüp Route: Sokollu Mehmet Pasha Complex, Siyavuş Pasha Son Tomb, Pertev Pasha Tomb, Zal Mahmut Pasha Complex, Nazli Defterdar Mahmut Celebi Mosque.
- Route 4: Eminönü-Azapkapı Route: Rüstem Paşa Mosque, Süleymaniye Complex, Şehzade Complex, Azapkapı Sokullu Complex.
- Route 5: Edirnekapı- Fatih Route: Mihrimah Sultan Complex, Güzel Ahmet Pasha Tomb, Semiz Ali Pasha (Cedid Ali Pasha) Madrasa, Nişancı Mehmet Pasha Complex, Mesih Mehmet Pasha Complex, Architect Sinan Ağa Mosque, Hüsrev Pasha Tomb, Bali Pasha Mosque, Shah Hu ban Sultan Mosque and Tomb.
- Route 6: Haseki-Topkapı Route: Haseki Sultan Complex, Ramazan Efendi (Hüsrev Çelebi) Mosque, Hadım İbrahim Pasha Mosque, Kara Ahmet Pasha Complex, Şah Huban Hatun Complex, Sultan Selim (Halıcılar-Carpeters) Madrasa.
- Route 7: Büyükçekmece- Havsa Route: Haramidere Bridge, Sokollu Mehmet Pasha Mosque, Sultan Süleyman Caravanserai, Sultan Süleyman Bridge, Sokollu Mehmet Pasha Complex, Sokollu Mehmet Pasha (Lüleburgaz) Bridge, Sokollu Mehmet Pasha (Alpullu-Sinanlı) Bridge, Semiz (Cedit) Ali Pasha Mosque, Sokollu Mehmet Pasha (Kasım Pasha) Complex.
- Route 8: Edirne Route: Sokollu Mehmet Pasha Bath, Semiz Ali Pasha Caravanserai, Rustem Pasha Caravanserai, Sultan Selim Complex (Selimiye), Defterdar Mahmut Pasha Mosque.
- Optional: Aqueducts Route: Paşadere (Evvelbent) Aqueduct, Kırkçeşme Water Facilities, Kovuk (Curve) Belt, Long Belt, Güzelce (Gözlüce) Belt, Mağlova Arch.

Natural Landscape of Architect Sinan Route

Since the route of Architect Sinan is dated to the 16th century, it would be useful to refer to the 16th century Ottoman garden art before moving on to the natural landscape part. Information on Turkish-Islamic garden art in the Anatolian Seljuk Period is insufficient. Although political and military information about the Ottoman Empire is abundant, information on the development of the Ottoman gardens is scarce. [18] Expression books with pictures were made in the Ottoman Period. For example, in the work named "Hünername", not only the wars and victories of the sultan, but also scenes taken from daily life such as hunting, sports and entertainment are included; only entertainments and ceremonies are mentioned in the work "Sürname". [19] The Turks saw the garden as an ideal hunting area, namely a woodland and forest in the early periods.

There are pools, fountains, flower beds and trees in Edirne and Manisa palaces, which were the first palaces of the Ottoman period. The garden is maintained by the gardener heads. With the conquest of Istanbul, the old palace known today as Istanbul University and later Topkapi Palace were built. [20] Topkapı Palace, including its garden, is 700,000 m². This palace also served as an education, arts and religious center. It has been one of the best examples of civil architecture with two-storey roofed kitchens, vertical chimneys and large tree arrangements in the squares built by Architect Sinan during the reign of Suleiman the Magnificent. The garden of the palace consists of vineyards, sections where fruit and vegetables are grown, areas where sports such as archery, horse races, javelin and wrestling are performed, squares that are the scene of visits and ceremonies. In the 16th century, 921 gardeners and 200 vegetable growers work at the same time for the maintenance of both palace and kulliye gardens. More of the vegetables and flowers grown in the palace gardens are sold in 17 flower shops. [21]

One of the most distinctive features that distinguishes Ottoman palaces from other European palaces is that the gardens are planned after the palace construction. [22] Until the end of the 18th century, mosques were never the only building element in the Ottoman Empire, they are always a part of the complex. Other elements of the complex are structures like madrasahs, primary schools, tabons (guesthouses), almshouses (soup kitchens), hospitals, fountains, burial grounds and etc. Vegetables and fruits are grown in the gardens of the complex for the food of the guests and students staying in the complex. [23] Apricots, mulberries and apples are grown specially to make compote. In addition, it is possible to see the tulip gardens, which gave their name to a period in the 18th century and after, all over the Ottoman Empire. Rose cultivation is also the most important element of Turkish gardening art. Especially the places where a wide variety of roses used in burial grounds and mosque gardens are grown together are called "Gülizar" or "Gülistan". The use of plane trees in gardens is a tradition that remained from Central Asian Turkish gardens. [24] Plantings of trees in gardens are mostly informal. These are bred for silence and shadow. The woods are green areas for hunting and recreation. There are "Nishangah" where archery is performed and "Namazgah" where prayers are performed in the woods. The groves are in the form of public parks. [25]

As in many civilizations, the desire to create a paradise corner in suitable areas in the Ottoman period enabled the use of living and inanimate materials

together in the gardens. The most common living materials in gardens in the 16th century are large trees such as sycamore, ash, linden, elm, hackberry, laurel, redbud, and wild pear, and ornamental elements such as roses, tulips, hyacinths, grains and carnations. [26] For Turks, cypress symbolizes ascension to heaven, sycamore symbolizes strength, rose symbolizes symbolizes love and affection. [27] Due to the perception and depiction of heaven, water elements are also found in gardens, as well as inanimate materials such as large marble pools, sprinklers, flood fountains, fountains, and spouting animal statues. Natural landscape elements mostly named in Tezkiretü'l Bünyan and Tezkiretü'l Ebniye are Cypress tree, rose garden, tuba tree, kevser pool, tulips, flowers, İskender Çelebi garden. On the Architect Sinan Route;

- •7 Squares
- •1 arboreteum
- •40 parks
- •1 forest
- •1 natural protected area
- •5 memorial trees
- •1 bird breeding ground can be seen.

Plant communities along the route:

Trees:

Plane Tree (Platanus orientalis): On the Eyüp, Sultanahmet and Topkapı routes, it can be seen in the Atik Valide and Mihrimah Sultan Mosques. It is a symbol of sovereignty and power. It is mentioned as a place of accommodation and shelter in the Epic of Manas. The plane tree known as the great and gaba tree is the symbol of long life and power. For this reason, in the old Turkish culture, a plane tree is planted when the child is born so that s/he can be a strong person with a long life. It is known that the Feast of Sacrifice ceremonies are also held under the plane tree. It is often planted for its shade. [28]

Cypress (Cupressus Sempervirens): It is seen in Karacaahmet and Edirnekapı. It is generally a famous tree as a graveyard tree. However, it is preferred in burial areas because it is always green. It symbolizes life, beauty, righteousness, art and what is capable. It is the symbol of believers in Sufism. [29]

Judas Tree/Redbud (Cercis siliquastrum): It can be seen on Fethi Pasha Grove, Yıldız Park, Beşiktaş-Üsküdar Route. Since it is mentioned in the Bible, it is the color of nobility, especially during the Roman Empire. This belief goes back to Homer's Iliad. The redbud, which is also mentioned in Hz. Ali's praise poems, in the lines of Yusuf Has Hacib, Nefi and Fuzuli, is the symbol of nobility, sublimity, inaccessibility and power. [30]

Nettle Tree (Celtis Australis): It is possible to see hackberries in Beyazıt, in the vicinity of Kaptan-ı Derya İbrahim Pasha Mosque, next to the Istanbul

University Library, in front of Ihlamur Pavilion, in Topkapı Palace, Zal Mahmut Pasha Mosque and Defterdar Mahmut Çelebi Mosque. It is a tree known as "God's Luck". It is believed that it protects form the evil eye and evil. [31]

Pine Tree (Celtis Australis): It is seen in the Fethi Pasha Grove on the Edirnekapı route. Larch and red pine are the symbols of men, and pine nuts are the symbols of women. Larch is a tree that those who do not have children apply for help. [32]

Oak Tree (Quercus): The oak tree is seen in Sultanahmet Square, Hagia Sophia, Yıldız Park and Eyüp route. It is also known as Pelit and Bonito. It is known as the grandfather tree or the father tree. There is a tradition of setting up swings for newlyweds. It is also known as the place of making wishes and prayers, as it is known as the square of the heroes who are respected in the presence of God. [33]

Flowers: In the natural landscape on the route; 13 types of roses, 21 types of blue hyacinths: 12 types of white and pinkish hyacinths: 7 types of lilac: 7 types of jasmine: 20 types of tulips: 13 types of beeflower: 14 types of crocus: 17 types of sesame: 5 types of peonies: 3 types of greenery: 11 genera violet: 17 types of carnations: 5 types of wishfuls: 10 types of daffodils, tulips, chrysanthemums, dahlias, violet, purple bunches and water lilies were seen.

Rose (Rhodon/Rosa): It can be seen frequently on the Haseki-Topkapı, Sultanahmet and Eyüp route. It is the symbol of Muhammad, Aphrodite and Isis in mythology. It is known as the result and fruit of the knowledge formed in the heart. Symbolizes the heart and the perfect human being. [34]

Tulip (Tulipa gerneirana): It is possible to see the tulip in all parks, gardens and medians, including Edirne and aqueducts route in spring. It is the symbol of God in Islam. It is associated with kindness and grace. [35]

Chrysanthemum (Chrysanthemum indicum): It is possible to see it on all routes. Chrysanthemum is a fall flower. It is associated with happiness, sadness and love. [36]

Star flower (Pinnate dahlia): It can be seen on the route of Edirne, Büyükçekmece, Yıldız Park, Fethi Paşa Grove and aqueducts. It was used to protect from snakes and evil spirits. [37]

Violet (Viola odorata): Violet seen on the route of Sultanahmet is a delicate flower with various colors and leaves resembling a heart shape. It is associated with Attis and Iamos myths in Greek mythology. [38]

Purple cluster (Wisteria sinensis swet): It is seen Yıldız Park, Maçka Park, Sultanahmet, Defterdar Celebi Mosque on the Beşiktaş route. It is a symbol of patience, refinement and dignity. [39]

Lotus/Water Lily (Nymphaea alba): It is possible to see lotus in the aqueducts on the route. This flower, also known as the white water rose, which usually stands in the pools of palace gardens, is the harbinger of winter. [40] [41] It is the symbol of spiritual awakening, purity, beauty, wisdom and grace in Turks. It is the throne of Buddha in the Indian belief system. It is one of the frequently used motifs in Turkish carpets.

Conclusion and Suggestions

In recent years, changing tourist expectations and the responses of tourism professionals to these expectations have rapidly diversified and each country has created a different product range in direct proportion to its own wealth. While preserving the places of sea, sand, sun tourism and cultural tourism as always, many types of special interest tourism like river tourism, ornithology, walking routes and etc. have taken place in this range. For this reason, the number of European Cultural routes is increasing every year. The aim is to mix and present cultural tourism with other tourism types. The last wagon to join this train is Turkey. In this context, the cultural routes program, which started in the late 80s in the world and in Turkey in the late 90s, is popular in terms of connecting many types of tourism. St. Santiago de Compestella route combines faith and walking, Lycian way route combines walking, sea, sand, sun and cultural tourism. If the cultural routes to be created in Turkey connect many different tourism activities, it will increase the popularity of the routes and make them preferred. Architect Sinan's route prepared in this context and while it is a cultural tourism activity in itself, it also integrates with shopping tourism and gastrotourism. In addition, this route is not a cultural tourism activity that only concerns the Turkish nation. Architect Sinan is a genius who lived in the 16th century. Sinan, who surpassed the architectural superiority of Hagia Sophia, built in the 6th century in terms of the diameter of its dome, and whose works have remained intact for centuries, proved that he is not only a genius of his own century but also of today's world. [42] In this context, Sinan's works are world heritage. Edirne Selimiye Mosque was already included in the UNESCO World Heritage list in 2011.

One of the founding purposes of European cultural routes is to accept every value on the route as a common cultural heritage. As Shaw says "It is one thing to consider how the past is situated as heritage in the present, and quite another to project our contemporary understandings of heritage onto another culture and era". [43] When the European cultural routes are examined, the route with the most building diversity will be Architect Sinan route if accepted. It is also an advantage that the route consists of Istanbul and Edirne routes. It is the chance of this route that Istanbul is among the most visited cities in the world and that both Edirne Selimiye Mosque and Istanbul are included in UNESCO. One of the aims of European cultural routes is to spread tourism to 12 months. It is also an advantage that this route can be toured in off season or low season. Due to the rapidly increasing historical series in recent years, there is a great interest in the venues belonging to the periods in which the series took place. Establishing such a cultural route is important both in national and international platforms. If the Architect Sinan Route is created and included in the European Culture Route program;

- The route will be the only route with Ottoman artifacts both in Turkey and Europe.
- The route will be the only example that reflects the 16th century Ottoman architecture.
- It will be the only cultural route with 60 historical artifacts on it for 300 km.
- It will be the first route where Turkey reflects its own history.

Also;

- When the route is divided into two as Edirne and Istanbul, the fact that all of it is walkable and the Edirne part is suitable for riding on horseback turns the route into a walking route.
- The fact that 22 endemic species can be seen on the route is important in terms of landscape elements.
- The route can be combined with a different European cultural routes.
- It increases Istanbul's brand value.
- Besides Sinan's works, there are also world-famous works on the route, making the route important.
- All of the works on it are standing and can be visited, some of them need restoration.

   Things to be done in order for this route to be considered as a route are;

- Marking the route as an international cultural route as in Figures 1 and 2.,
- Establishing roads that are only open to pedestrian traffic, (This is possible in most places on the route)
- Doing restoration work in accordance with the original,
- Carrying out promotional activities about Architect Sinan on an international platform and carrying out activities such as documentaries and series aimed at his genius
- Carrying out mapping studies professionally and preparing guide catalogs for hikers
- Gathering information about Architect Sinan and his works and legends on the route in a single source and turning them into a touristic product,
- Training the staff of mosques on the route that is not yet touristic, are suggestions developed within the scope of this study.

Although many restoration works have been carried out regarding the works in 2011 and before, although some parts of the route are in Istanbul, it is very closed to tourism. For example, the Haseki route is a difficult route because both the public and the people working in the streets and mosques are not used to the idea of tourism and visitors. If such a route is realized, priority should be given to the Haseki route among the routes. In addition, it is very important to carefully design the usage areas of the historical buildings on the route. For example, Haseki Hürrem Bath is a good example of its use as it is, while the use of Rüstem Pasha Madrasa as a tuberculosis dispensary can be criticized negatively.

It is also possible to prepare a 1-month route with all the works of Architect Sinan. For this reason, the route is very important not only because it combines with other routes but also because it is a single route consisting of different countries.

The route should be marked in European standards, transportation should be arranged in this context and close distances should be transformed into a walking route. The fact that all distances except the distance between the two sides in Istanbul are close to each other makes it easier to build such a walking path. In fact, the fact that the phaetons are used comfortably on the Edirne route makes it possible to travel on the route by phaeton and horse. Since 23 of the works are under renovation, not all of the works can be visited. 7 of the buildings lost their originality completely, 13 of them partially. 9 of the works are not used in accordance with the purpose of construction. These works should be brought to the route urgently. In this context, Haseki bath in Sultanahmet is a

good example. The building, which was used as a warehouse until 2001 without any relation to its original, has been restored in accordance with its original and is used for its real purpose. It has turned into Istanbul's highest quality and most preferred tourist bath structure. It is a great chance for nature lovers that the aqueducts part of the route is located in the forest. When viewed as a natural landscape;

270 plant species that grow naturally within the provincial border of Istanbul are included in the "Turkey's Endangered Rare and Endemic Plants List." Among them, the richest populations of 40 species in the world are found in Istanbul. It is possible to see 20 of this species on the route. [44] Species that can be seen on the route are,   Amsonia Orientalis, Arama Italicıim, Asperula Littoralis, Amaranthaceae, Convallaria Majalis, Centaurea Tchihatcheffi, istanbulensis, Hedera Helix, Cirsium Polycephalum, Crocus olivieri, Hypericum Calycinum, Lamium Album, Lathyrus undulatus, Linum Usitatissimum, Linum   Tauricum, Symphytum Pseudobulbosum, Taraxacum Officinale, Taraxacum pseudobrachyglossum, Origanum Vulgare, Medicago Sativa, Verbascum Degenii. [45]

Istanbul has more plant species than countries such as the Netherlands and Belgium combined. [46] However, unplanned growth and the increase in the use of chemical drugs have negatively affected plant diversity. These problems have accumulated, leaving many plant species "not found anywhere else but Istanbul" in danger of extinction. In addition, the monumental trees in the complexes, the roses that are the symbol of Islam planted in every mosque of Sinan today, and the colorful tulips, which are the symbol of Istanbul in spring, are the natural landscape elements that can be seen on the route.

This prepared route is the most comprehensive, most preferable and the only route that has been proven to be preferable to date in Turkey. One of the conditions for being a European cultural route is that the routes have a connection with Europe. Architect Sinan Route is a route that can be connected to Europe in Turkey. In fact, this route is the only route that can unite Europe and the Middle East in a single line, in a single century and in a single architecture. In addition, the transformation of Edirne and Istanbul into Architect Sinan cities will increase the brand values of the cities.

TABLE 1. *Classification of Culture Routes*

Cultural Routes				
Theme A		**Theme B**		
• Routes Used for a Special Purpose in a Period of History		• The Defined Routes for the Use of Cultural Heritage and Landscape and Promotion of Tourism Activities, Ensuring Sustainable Development, Preservation of Natural and Cultural Heritage		
A.1	**A.2**	**B.1**	**B.2**	**B.3**
Types • Trade Trails • Pilgrim Routes • Migration Routes • Military Trails	• Routes of people who play an important role in history	• Historical Routes	• Historical and Nature Routes	• Naturel Routes

General Features
• Used regularly during a period of history;
  - Cultural exchanges and travels
  - Population movements
  - Continuity in time and space
• It has dynamic and historical functionality with a well-defined purpose for route use
• Existence of both tangible and intangible elements
	• Only physical routes of travel for a special purpose, such as discoveries and occupations
	• Population and cultural changes without mobility during a period of history
		• Thematic material related to actual / ideal connection defined / defined by historical and cultural heritage
		• Unused route in a period of history
			• Present-day thematically defined by both historical and natural elements of geography associated with real or ideal bond
			•
				• Observation of both historical and natural elements, as well as outdoor sports such as hiking and mountaineering.

It was compiled by Tanrisever's (2020) in **as an Alternative: Cultural Routes Education for Tourist Guides, a Model Suggestion from Turkey.**

TABLE 2. *The cultural routes of the different categories which are certified by the Council of Europe are as follows.*

	Name	Certificate Year	Content	Number of Countries	Type
1	Santiago de Compostela Piligrim Route	1987	Pilgrim	9	A1
2	The Hansa	1991	Trade	16	A1
3	Viking Route	1993	Sea, trade	14	A1
4	Via Francigena	1994	Religion	4	A1
5	El Legado Andalusi Route	1997	Architectural, tangible and intangible cultural heritage	8	B1
6	Phoenicians Route	2003	Sea, tangible and intangible cultural heritage	9	B1
7	Pyrenean Iron Route	2003	Architecture and art	3	B1
8	Mozart Way	2004	Architecture and art	10	B1
9	European Route of Jewish Heritage	2004	Jewish heritage	19	B1
10	St. Martin of Tours Route	2005	Religion	10	A1
11	Cluniac Sites in Europe	2005	Tangible and intangible heritage	8	B1
12	Olive Trees Route	2005	Gastronomy	14	B3
13	Via Regia	2005	Tangible and intangible heritage	7	
14	Transromanica	2007	Tangible heritage	9	B1
15	Iter Vitis Route	2009	Vinitourism	19	B3
16	Cistercian Abbeys Route	2010	Tangible heritage	11	B1
17	European Cemeteries Route	2010	Art	20	B1
18	Prehistoric Rock Trails	2010	Prehistoric art	6	B2
19	European Route of Historic Thermal Towns	2010	Health	15	B3
20	Route of St. Olav Ways	2010	Religion	3	A1
21	European Route of Ceramics	2012	Ceramic Heritage	5	B1

22	European Route of Megalithic Culture	2013	Megalithic Heritage	7	B1
23	Huguenot and Waldensian Trail	2013	Culture and history	4	B2
24	ATRIUM	2014	Architecture	5	B2
25	Réseau Art Nouveau Network	2014	Art	16	B2
26	Via Habsburg	2014	History and art	4	B1
27	Roman Emperors and Danube Wine Route	2015	History	4	B 1 B2
28	Emperor V. Charles Route	2015	Tangible and intangible heritage	10	A2
29	Destination Napoleon	2015	History	12	A2
30	In the Footsteps of Robert Louis Stevenson	2015	Culture and History	4	A2
31	Fortified Towns of the Grande Region	2016	History and Architecture	3	B1
32	Impressionism Route	2018	Art	7	B2
33	Via Charlemagne	2018	Art	7	B2
34	Iron Curtain Trail	2019	History	23	B1
35	Liberation Route Europe	2019	History	11	B1
36	European Industrial Heritage Route	2019	Industrial Heritage	24	B1
37	Le Corbusier Destinations: Architectural Promenades	2019	Architecture	6	B1
38	Reformation Route	2019	History	8	B1

Prepared by the author.

TABLE 3. *All Works of Architect Sinan*

Build Type	TB	TE	TM	Three	Two	One	Total
Mosque	81	84	102	80	2	25	107
Small Mosque	50	52	46	45	6	1	52
Grave/Tomb	19	22	40	16	4	25	45
Madrasa	61	63	70	58	4	12	74
Kuran School	7	7	8	7	0	1	8
School	0	0	6	0	0	6	6
Dervish Convent	0	0	6	0	0	6	6
Hospital	3	3	3	3	0	0	3
Imaret	16	18	21	15	0	7	22
Caravanserai	17	20	27	14	5	12	31
Palace	33	35	28	24	10	4	38
Pavillion	0	0	5	0	0	5	5
Storehouse	6	8	6	5	2	1	8
Turkish Bath	37	52	40	35	5	16	56
Bridge	8	8	7	6	2	1	9
Aqueduct	6	6	7	6	0	1	7
Total	344	378	422	314	40	123	477

TB: Tekiretü'l Bünyan; TE: Tezkiretü'l Ebniye; TM: Tuhfetü'l Mimarin Three: Works mentioned in all three manuscripts; Two: in the two manuscripts; One: in only one manuscript. [47]

MAP 1. *Architect Sinan Route (All works)*
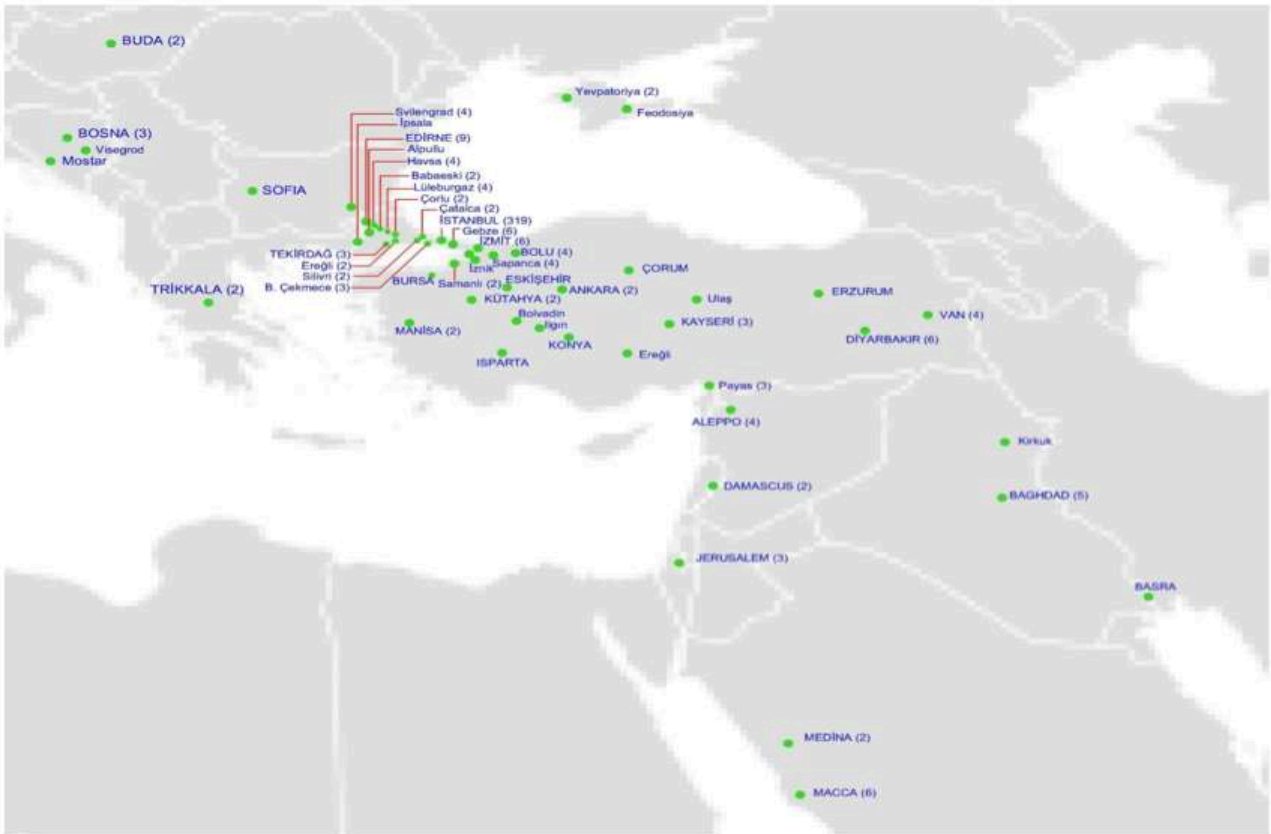
MAP 2. *Architect Sinan Route from Istanbul to Edirne*
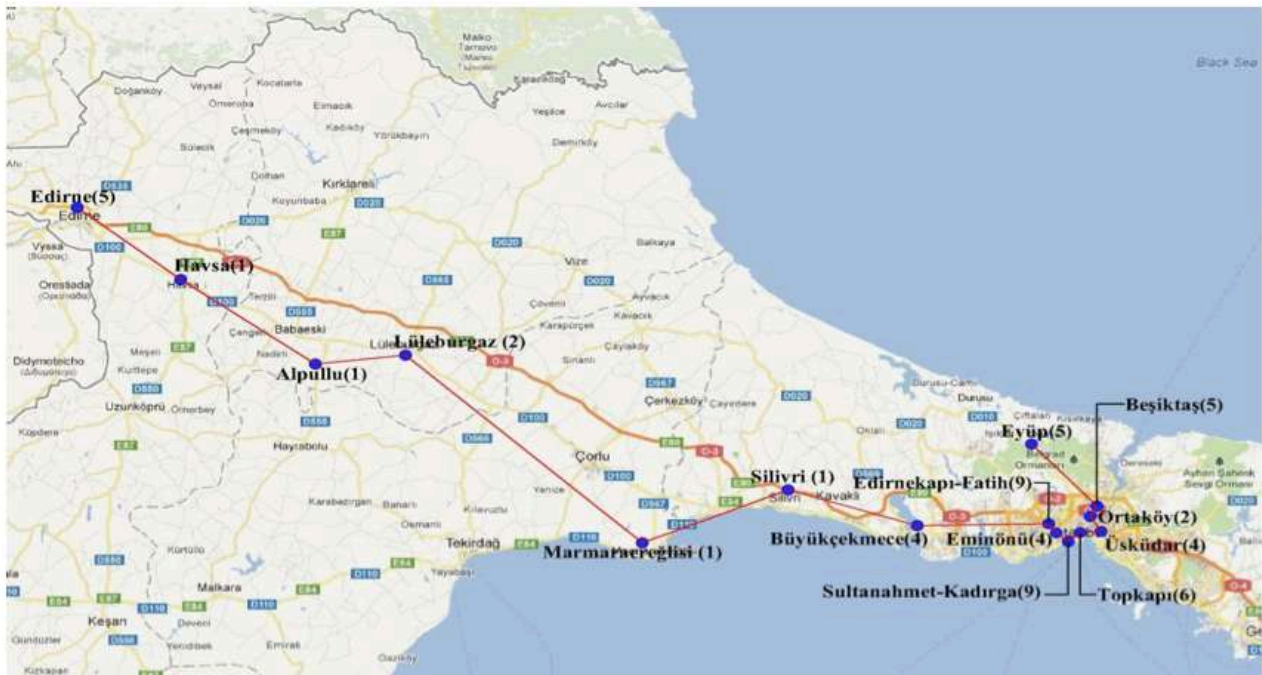
MAP 3. *Distribution of Artifacts on the Route*
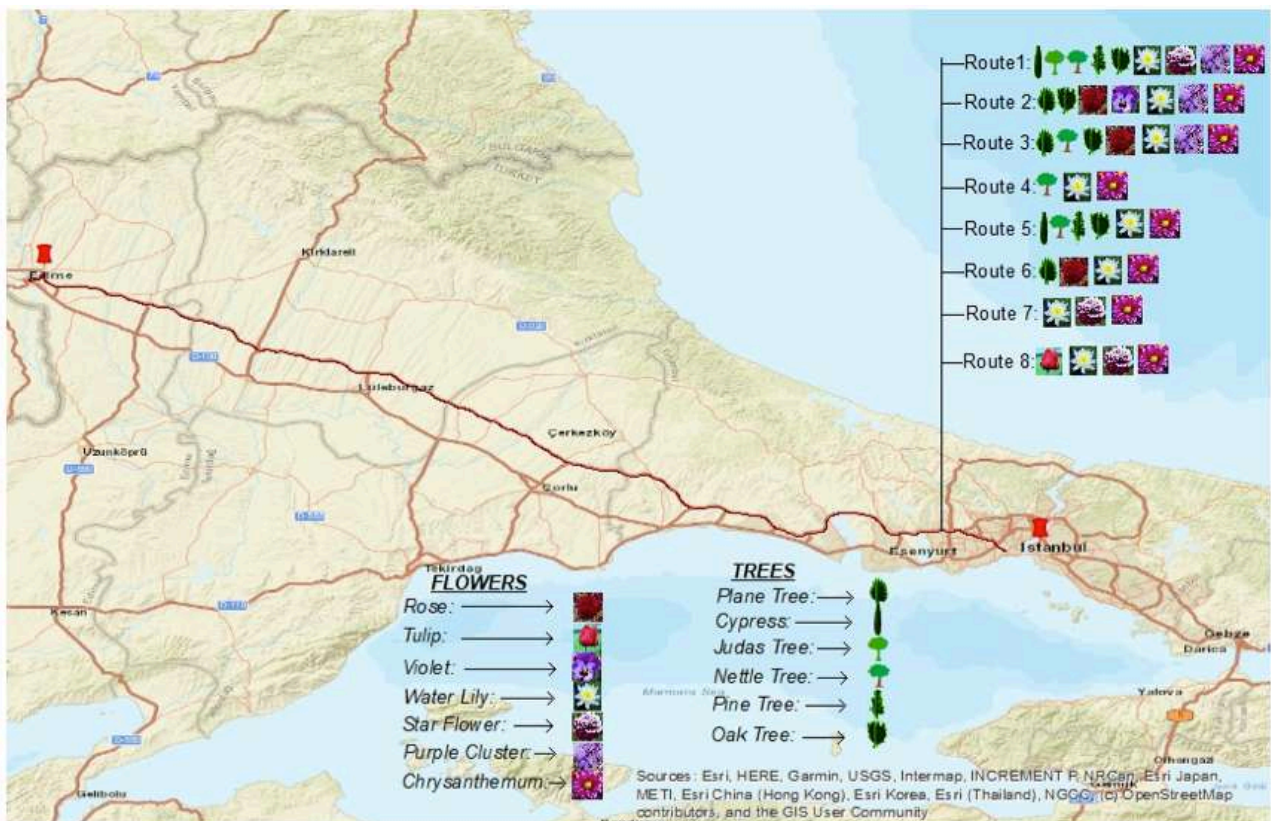

MAP 4. *Flowers and Trees on the Route*

FIGURE 1. International marking   FIGURE 2. National marking

REFERENCES

1.Nuray Türker, 'Religious Tourism in Turkey' *Alternative Tourism in Turkey*. (Springer, Cham, 2016), pp. 151-172.

2.Oktay Aslanapa, *Mimar Sinan'ın Hayatı ve Eserleri* (Türk Kültürünü Araştırma Enstitüsü, 1988).

3.Metin Sözen, *Arts in the Age of Sinan* (Ministry of Culture and Tourism of the Turkish Republic, 1988).

4.Turgut Cansever, *Mimar Sinan* (Klasik Yayınları, 2010).

5.Canan Baştemur, *Mimar Sinan Rotasının Doğal ve Kültürel Peyzaj İzleri* (Master Thesis. Ankara University, 2013).

6.Rıfkı Melul Meriç, *Mimar Sinan Hayatı ve Eseri* (Türk Tarih Kurumu, 1965).

7.Abdullah Kuran, *Mimar Sinan (*Prestij Yayınları, 1986).

8.Abdullah Kuran, *Sinan The Grand Old Master of Ottoman Arctitecture* (Ada Yayınları, 1987).

9.Canan Baştemur, *Mimar Sinan Rotasının Doğal ve Kültürel Peyzaj İzleri* (Master Thesis. Ankara University, 2013).

10.Gülru Necipoglu, *The Age of Sinan: Architectural Culture in the Ottoman Empire* (Princeton: Princeton University Press 2004)

11.Suphi Saatçi, *Bir Osmanlı Mucizesi; Mimar Sinan* (Ötüken Yayınları, 2005).

12.Canan Baştemur, *Mimar Sinan Rotasının Doğal ve Kültürel Peyzaj İzleri* (Master Thesis. Ankara University, 2013).

13.Kunie Sugio, 'A consideration on the definition of the setting and management/protection measures for cultural routes.' *In: 15th ICOMOS General Assembly and International Symposium: Monuments and sites in their setting - conserving cultural heritage in changing townscapes and landscapes* (17 – 21 oct Xi'an, China, 2005).

14.María Rosa Suárez-Inclán Ducassi, 'Los Itinerarios Culturales' *Hereditas* 13 2005 p.8.

15.Canan Tanrısever, 'Kültür Rotası Gruplarına Yönelik Uzmanlaşma' *Turist Rehberliğinde Uzmanlaşma*, ed. Özlem Köroğlu ve Özlem Güzel (Nobel Yayıncılık, 2019), pp. 65-100

16.Canan Tanrısever, 'As an Alternative: Cultural Routes Education for Tourist Guides, A Model Suggestion from Turkey.' *Cases on Tour Guide Practices for Alternative Tourism*, ed. Gülsün Yıldırım, Ozlem Ozbek, Ceyhun Cağlar Kılınc, Abdullah Tarınc, (IGI Global, 2020), pp. 217-239.

17.Dimitrios Buhalis, 'Tourism on the Greek Islands: Issues of peripherality, competitiveness and development.' *International journal of tourism research* 1.5 1999, pp. 341-358.

18.Gönül Aslanoğlu Evyapan, *Tarih İçinde Formal Bahçenin Gelişimi ve Türk Bahçesindeki Bitkiler* (ODTÜ Mimarlık Fakültesi Yayınları, 1974).
19.Suut Kemal Yetkin, *İslam Ülkelerinde Sanat* (Cem Yayınevi, 1984).
20.Nurhan Atasoy, *Hasbahçe: Osmanlı Kültüründe Bahçe ve Çiçek* (Koç Kültür Sanat ve Tanıtım Hizmetleri, 2002).

21.Canan Baştemur, *Mimar Sinan Rotasının Doğal ve Kültürel Peyzaj İzleri* (Master Thesis. Ankara University, 2013).

22.Gönül Aslanoğlu Evyapan, *Tarih İçinde Formal Bahçenin Gelişimi ve Türk Bahçesindeki Bitkiler* (ODTÜ Mimarlık Fakültesi Yayınları, 1974).

23.Murat Ertuğrul Yazgan and Elmas Erdoğan, 'Tarihi çevrelerde peyzaj planlama' *Ankara: Peyzaj Mimarisi Derneği Yayınları*, 1992, vol. 2, no. 87,

24.Erdoğan Gültekin, *Bahçe ve Peyzaj Sanatı Tarihi* (Çukurova Üniversitesi Ziraat Fakültesi Yayınları, 1998).

25.Sedat Hakkı Eldem, *Türk Bahçeleri* (Milli Eğitim Basımevi, 1976).

26.Şazuman Sazak, 'Türk Bahçe Sanatına Bir Örnek; Edirne Sarayı Bahçesi', *Trakya University Journal*, vol. 6, no. 2, 2005, pp. 9-16.

27.Sedat Hakkı Eldem, *Türk Bahçeleri* (Milli Eğitim Basımevi, 1976).

28.Pervin Ergun, *Türk Kültüründe Ağaç Kültü* (Atatürk Kültür Merkezi Yayınları, 2004).

29.Cevdet Çulphan, *Serviler I.* (İsmail Akgün Matbaası, 1991).

30.Nurhan Atasoy, *Hasbahçe: Osmanlı Kültüründe Bahçe ve Çiçek* (Koç Kültür Sanat ve Tanıtım Hizmetleri, 2002).

31.Pervin Ergun, *Türk Kültüründe Ağaç Kültü* (Atatürk Kültür Merkezi Yayınları, 2004).

32.Rezan Karakaş, 'Siirt Halk Kültüründe Kutsal Ağaç ve Türbeler', *Millî Folklor*, vol. *26*, no. 102, 2017, pp. 168-179.

33.Uğur Tuncel, *İstanbul'un Kültür Envanteri* (İBB Yayınları, 2011).

34.Beyhan Kesik, 'Nefi'de Rintlik', *EKEV Akademi Dergisi*, vol. 11, no. 33, 2007, pp. 257-270.

35.Bayhan Nevzat, *İstanbul'da Lale Zamanı* (İBB Yayınları, 2007).

36.Selim İleri, İstanbul *Lale ile Sümbül (*Doğan Kitap, 2007).

37.Beyhan Kesik, 'Nefi'de Rintlik', *EKEV Akademi Dergisi*, vol. 11, no. 33, 2007, pp. 257-270.

38.Beyhan Kesik, 'Nefi'de Rintlik'. *EKEV Akademi Dergisi*, vol. 11, no. 33, 2007, pp. 257-270.

39.Selim İleri, *İstanbul Lale ile Sümbül.* (Doğan Kitap, 2007).

40.Erdal Üzen and Murat Çamcı, *İstanbul'un Endemik Bitki Türleri*, (Galatasaray University, 2012).

41.Selim İleri, *İstanbul Lale ile Sümbül* (Doğan Kitap, 2007).

42.G. Ezgi Korkmaz, 'The architect of city legends: the Great Sinan', *Milli Folklor*, vol. 15, no. 59, 2003, pp. 23-26.

43.Wendy Shaw, 'Heritage as cultural capital in the late Ottoman Empire,' *The Politics and Practices of Cultural Heritage in the Middle East* (London, 2014) pp. 55-65.

44.Erdal Üzen and Murat Çamcı, *İstanbul'un Endemik Bitki Türleri* (Galatasaray University, 2012).

45.Erdal Üzen and Murat Çamcı, *İstanbul'un Endemik Bitki Türleri* (Galatasaray University, 2012).

46.Meral Avcı, 'Çeşitlilik ve endemizm açısından Türkiye'nin bitki örtüsü', *İstanbul Üniversitesi Edebiyat Fakültesi Coğrafya Bölümü Coğrafya Dergisi*, no. 13, 2005, pp. 27-55.

47.Abdullah Kuran, *Sinan The Grand Old Master of Ottoman Arctitecture* (Ada Yayınları, 1987).