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Advancing futures thinking in the real estate field

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Abstract

Purpose – The purpose of this paper is to study the user experiences of the futures wheel method to investigate its suitability to advance futures thinking in the real estate field.

Design/methodology/approach – The user experiences of the futures wheel method are investigated through questionnaire answers of 114 master's level students and real estate experts taking part in future wheel workshops.

Findings – The futures wheel method could enhance future-oriented thinking and decision-making in the real estate field. The respondents see futures thinking as an important skill and recognize several advantages concerning the method.

Practical implications – The futures wheel method bears great potential to be used in the real estate sector and it could be a fruitful addition to the curriculums at different education levels in real estate studies.

Social implications – Futures thinking is essential when aiming for sustainable decisions in the real estate field which again would benefit the whole surrounding society.

Originality/value – This paper is the first published paper concentrating on the user experiences of the future wheel method in the real estate sector. The benefits and the disadvantages of the method are investigated but also the attitudes indicating the potential of the method to be successfully adopted in the field are analyzed.

Keywords Forecasting, Future studies, Curriculum development, Futures wheel, Real estate education

Paper type Research paper

1. Introduction

Real estate market actors are faced daily with the essential need to make different decisions concerning real estate. These decisions have often many complex and far-reaching impacts which can be very wide, including economic, political, environmental, social, cultural, technical and legal impacts. The reason for this is the strong link between the real estate market and the surrounding society and on the other hand, the long-life cycle of real estate. (Schauppenlehner-Kloyber and Penker, 2015; Toivonen and Viitanen, 2016). According to Toivonen and Viitanen (2016), real estate market actors are often unaware of the forces that are driving the development and the causal relationships between the decisions and their future impacts. Due to this, market actors might be conducting significant decisions without proper knowledge and analysis of their possible and plausible long-term impacts. This again can lead to unwanted and unexpected development which may endanger the future sustainability of the real estate sector.

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Even though the need to foresee the possible future impacts is clear and the challenge has also been recently recognized among the market actors, the level of awareness and know-how of potential holistic methods to assist in this task is still low in the real estate field (Toivonen and Viitanen, 2016). It seems that many curricula in real estate education have been unable to respond enough to the situation. By incorporating futures thinking and the methods of futures studies into the study programs, the capability of the graduates to handle questions concerning the future during their working careers could be enhanced. By helping market actors to foresee the possible future consequences of their actions, market events or other phenomena, as a result more conscious and sustainable decisions could be reached in the field of real estate.

Futures studies offer a wide variety of different methods and tools. This paper presents one potential method, the futures wheel method, that could be used when aiming for more holistically acknowledged and justified decisions and actions concerning real estate. The futures wheel method is a visual brainstorming tool that can be used to identify different future impacts of the phenomenon under investigation by placing possible impacts in a wheel formation. With the method, different impacts and their causal relationships can be identified, analyzed and organized (Glenn, 2009; Rubin, 2002). It not only shows the first-tier impacts but can also reveal the possible secondary and tertiary influences that are often left unrecognized. The futures wheel method is simple and user-friendly and does not require special resources (Benckendorff, 2007; Boujaoude, 2000; Glenn, 2009; Toivonen, 2011; Toivonen and Viitanen, 2016) and could therefore be easily incorporated into real estate curricula and education programs at different levels.

This paper aims to study the user experiences concerning the futures wheel method to investigate its suitability and usability in the real estate field. This is done by investigating user experiences of 70 real estate economics and built environment master's level students and 44 experts working in the real estate sector and taking part in continuing education. First, the participants took part in a facilitated futures wheel workshop where they applied the wheel by themselves in groups by detecting the possible future impacts of a given phenomenon. After that, the participants answered a questionnaire investigating their user experiences of the method through which the suitability and the usability of the method was studied to investigate the potential of the futures wheel method to be implemented in the field of real estate.

Even though some researchers such as Kawuzi (2016), Rantasila (2015), Toivonen (2011), Toivonen and Viitanen (2015) and Toivonen and Viitanen (2016) have earlier used the futures wheel method in real estate related issues, there are no academic studies concentrating on the user experiences of the method in the real estate sector. Our results show that both the students and the experts see futures thinking as an important skill when working in the real estate field and are therefore keen to see it as a part of real estate curricula in university studies or in continuing education. The positive attitude of the respondents toward the future wheel method and its recognized advantages indicate that the futures wheel method bears great potential to be used in the real estate sector and could be a fruitful addition to the curricula at different education levels in real estate studies.

The paper includes seven sections. Section 2 discusses the nature and content of real estate education. Section 3 discusses the futures wheel method. Section 4 presents the research design while the results are shown in the following Section 5. The results are discussed in Section 6 which also analyzes the study itself and its limitations. Finally, Section 7 presents the drawn conclusions and gives suggestions for future research.

2. Real estate education

According to Jayantha and Chiang (2012) and McFarland and Nguyen (2010), in general, two separate lines in real estate education can be identified: the multidisciplinary approach and the common financial management approach. Studies by Ford and Elkes (2008), Ooi and Yu (2011), Schulte (2003), Tu *et al.* (2009) and Weinstein and Worzala (2008) highlight the importance of the financial aspects in education.[AQ1] Some of the scholars, in turn, such as Galuppo and Worzala (2004), Musil (2005) and Weinstein and Worzala (2008) see that real estate education should reach beyond financial issues and point out that multidisciplinary elements should be included in the programs. Many different scholars have identified the most important topics for real estate curricula (Black and Rabianski, 1999; Dechaine, 2011; Galuppo and Worzala, 2004; Lizieri and Baum, 2002; Rosta, 2011; Porter, 2012; Schulte, 2000; Viitanen, 2000 and Weinstein and Worzala, 2008).

Jayantha and Chiang (2012) stress that the curriculum should respond to the needs of the industry by equipping graduates with up-to-date knowledge and skills. However, this has not always been the case. The mismatch between the academia creating the curriculum and the views of the industry professionals have been acknowledged by several scholars such as Butler *et al.* (1998), Chambers *et al.* (2009), Poon and Hoxley (2011), Souza (2000), Weinstein and Worzala (2008) and Worzala (2002). Amidu (2016) again places a question: "Is there a genuine misunderstanding between the stakeholders on what a typical real estate curriculum is meant to achieve?" The curricula have been judged to be too narrow and parochial by their nature (Ooi and Yu, 2011). Dymond *et al.* (2015) criticize the silo mentality in real estate education typical to universities. According to Amidu (2016), certain areas considered as key operational elements of the industry have not been adequately covered in the curricula.

In addition to context-based core subjects, other supporting skills for real estate curricula are recognized as significant ones in different investigations. A study by Galuppo and Worzala (2004) and Jayantha and Chiang (2012) underline the importance of communication and the interaction skills of graduates. Galuppo and Worzala (2004) and McFarland and Nguyen (2010) also highlight the need for different technological skills. Critical thinking and problem-solving skills are seen as important by several scholars such as Anderson *et al.* (2000), Dymond *et al.* (2015) and Jayantha and Chiang (2012). A study by Poon and Hoxley points out the need for practical skills and commercial awareness. Some of the curricula include topics such as ethics and speaking and writing skills (Jayantha and Chiang, 2012; Dymond *et al.*, 2015; McFarland and Nguyen, 2010; see also Gibler, 2001).

In many studies, a practically oriented approach in the real estate curriculum is preferred rather than a theoretical approach (Anderson *et al.*, 2000; Galuppo and Worzala, 2004; Jayantha and Chiang, 2012; Manning and Roulac, 2001). Among different teaching and learning methods, the case study approach (Jayantha and Chiang, 2012; Ooi and Yu, 2011), guest lectures by industry practitioners (Jayantha and Chiang, 2012; Ooi and Yu, 2011; Weinstein *et al.*, 2007) and teamwork are valued methods (Dymond *et al.*, 2015; Wolverton and Butler, 1997). Also, distance learning (Manning and Roulac, 2001) and student competitions (Charles, 2016) are used methods in real estate studies.

According to the previous studies, there is a growing need for versatility in the curricula. Dymond *et al.* (2015) call for broadly trained real estate professionals equipped with extensive know-how from a variety of academic disciplines. Also, Rosta (2011) points out that future real estate professionals will benefit from a diverse skill set when aiming for a successful career in the real estate sector. The views of McFarland and Nguyen (2010) are in line with Rosta's. According to D'Arcy and Taltavull (2009), new market realities set additional requirements for skills, for example, concerning topics such as sustainability.

Consequently, real estate education should not be seen as stable but rather ever-evolving as the real estate market environment itself is. This means that real estate education should respond to the forces of change in the industry to improve the profession. We see the capability of futures thinking as an essential part of this diverse skillset required from a successful real estate professional of the future as pointed out at the beginning of the paper. Futures thinking and its different tools could be adapted both to real estate curricula at the university level and to continuing education programs of business practitioners to strengthen their capability to foresee future development in the real estate field. Next, the futures wheel method is presented shortly.

3. Futures wheel method

This paper concentrates on one particular method of futures studies, the futures wheel method. The futures wheel resembles structural brainstorming where the studied element and its possible impacts are organized into a wheel form to demonstrate the causal relationships between the element and its different level impacts. The studied element can be e.g. a phenomenon, trend, event, decision or weak signal. The futures wheel helps to organize, understand and clarify possible impacts and their order through a visual wheel form that is drawn based on the detected impacts. The method directs its users not only to analyze the first-level impacts that are directly caused by the object under study but also its secondary, tertiary, etc., impacts. The studied impacts can be addressed to e.g. a certain actor or to some other context (Glenn, 2009; Rubin, 2002).

The formation of the futures wheel starts by placing the studied object in the center circle (Figure 1). First, the impacts that are caused directly from the center circle element are written on the first tier surrounding the center circle. After that, the impacts caused by the impacts placed on the first tier are written on the second tier surrounding the first tier and the impacts caused by them are again written on the third tier surrounding the second tier. This procedure will be continued further until the impacts depart from the study context (Glenn, 2009). The futures wheel method visually resembles mind maps or concept maps in which main concepts are usually organized into different subcategories. Concept maps describe different relations between categories while futures wheels concentrate on causal chains (Figure 1).

The practice of drawing the wheel differs among researchers. Traditionally the futures wheel is drawn simultaneously in a joint session where the possible impacts are recognized together by the involved participants (Benckendorff, 2007; Boujaoude, 2000; Shakweer and Youssef, 2007; Toivonen *et al.*, 2016). However, in some of the previous studies, futures wheels have been formed later by an internal research team based on several separate interviews or results of previous studies investigating the possible impacts of the studied phenomenon (Rantasila, 2015; Toivonen, 2011; Toivonen and Viitanen, 2016). All practices have their own benefits and restrictions as described in detail by Benckendorff (2007) and by Toivonen and Viitanen (2016). The justification of the method and futures studies, in general, are discussed more deeply by scholars such as Glenn (2009), Seppälä and Kuusi (1993), Kamppinen *et al.* (2002), Malaska (1993) and Mannermaa (1999, 2004).

The futures wheel method can be used for a variety of purposes. According to Glenn (2009, p. 4), the method is usually used when:

- considering the possible impacts of current trends or potential future events;
- organizing thoughts concerning future events or trends;
- creating forecasts including alternate scenarios;
- demonstrating complex interrelationships;

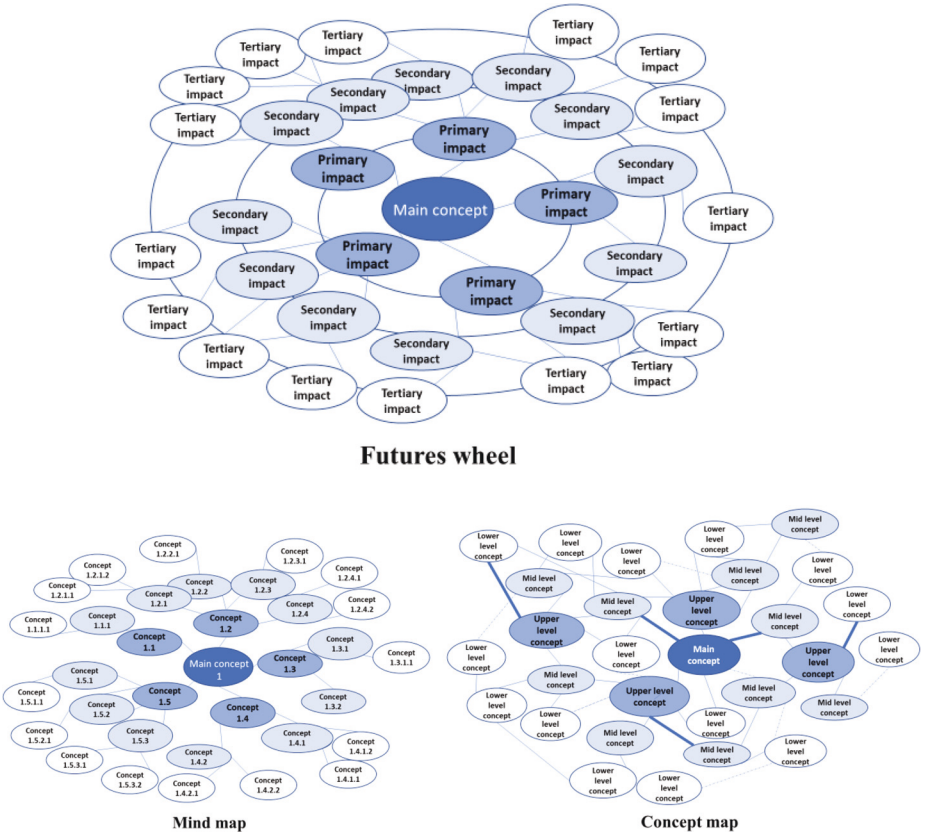

Figure 1.
Comparison of futures wheel, mind map and concept map

- expressing other futures studies;
- developing multi-concepts;
- encouraging to a futures-conscious perspective; and
- assisting group brainstorming.

The futures wheel method has earlier been used in studies concerning a variety of topics (Benckendorff, 2007; Boujaoude, 2000; Deal, 2002; Shakweer and Youssef, 2007; Bengston *et al.*, 2018). However, studies concentrating on real estate related issues are scarce (Toivonen, 2011; Toivonen and Viitanen, 2016) and the method could be used in the field more widely than it has been until now.

Like all methods, also the futures wheel has advantages and disadvantages. A clear advantage of the method is its simplicity. It does not require any special equipment. Pen and paper are sufficient although electronic programs can be benefited when visualizing the wheel. Despite its simplicity, the method is seen as very effective (Glenn, 2009). Toivonen and Viitanen (2016) state that the futures wheel is a suitable method for studies concerning the commercial real estate market that contains several complex causal relationships. According to their study, the futures wheel was found to be an especially fruitful method

when structuring the relationships between different phenomena and influences due to their illustrativeness. The method is also easy to assimilate which shortens the required time to prepare for the actual use of the wheel. Benckendorff (2007), Boujaoude (2000), Glenn (2009) and Toivonen (2011) especially appreciate the user-friendliness and ability to illustrate the complex causal relationships between different phenomena and their impacts. Toivonen (2011) and Toivonen and Viitanen (2016) conclude that the futures wheel method would be both beneficial and possible to use in several different contexts and a variety of objects could be analyzed while the method itself hardly sets any limitations.

According to Glenn (2009), the biggest challenge of the method is its dependency on the participants forming the wheel and their capability to foresee future impacts. This sets a lot of pressure to the researchers to be able to choose suitable participants. Benckendorff (2007) points out that sometimes participants are confused and tend to mix together the investigated force and its impacts and they start describing the appearance of the force itself and not its impacts. A well-trained workshop facilitator can prevent this by guiding the participants. The facilitator can also take a more active role when forming the content of the wheel but in that case, his influence on the content of the wheel might be more dominant and therefore noted. Also, when forming the wheel together in joint events, the number of participants is limited. This means that the formed wheel presents only the views of a certain group. However, the content of the wheel can be strengthened by using literature sources to broaden and validate the content of the wheel (Linturi *et al.*, 1998; Toivonen, 2011). If the wheel is formed jointly, open communication among the participants concerning their views is required. This might sometimes be a challenge if there is, for example, a competitive status between the participants (Toivonen and Viitanen, 2016). If the method is used in the real estate market, this should be taken into account.

4. Study design

This paper aims to study the user experiences concerning the futures wheel method to investigate its suitability and usability in the real estate field. The test group participants include master's level students studying real estate economics or taking part in built environment courses and experts working in the real estate sector with extensive work experience taking part in continuing education in real estate. The views and experiences of these two test group participants are analyzed to investigate the potential of the futures wheel method to be implemented in the field of real estate to assist and enhance future-oriented thinking and decision-making. Master's level students were chosen as a test group because university studies would be the most natural and effective stage to teach the necessary skills and tools simultaneously as field-specific knowledge is also formed. The inclusion of the other respondent group, the experts working in the field, was seen as important because the significant decisions concerning future real estate are conducted by the actors already in their working careers. The know-how of this group of experts could be reached through further and continuing education. The study was conducted in three steps: Step 1) Group implementation in workshops, Step 2) Questionnaire of user experiences and Step 3) Suitability and usability analysis. Next, the different steps will be described in detail.

4.1 Step 1: Group implementation in workshops

First, the test group participants took part in a facilitated futures wheel workshop where they tested the wheel in practice by detecting the possible future impacts of given phenomena. The phenomena studied by the participants included different phenomena influencing the real estates market environment such as urbanization, three-dimensional printing, Airbnb, virtual and augmented reality, co-living, sustainability pressure in

buildings, digitalization and shrinking cities. The participants placed the chosen phenomenon (e.g. Airbnb) in the center circle and then identified jointly its possible first level impacts and placed them on the first tier surrounding the center circle. After that, the participants continued to identify the second and the third level impacts on the second tier and on the third tier (Figure 2). The impacts can be accepted jointly so that only the impacts that are agreed by all participants are placed on the wheel (Glenn, 2009). However, this approach can be criticized because different participants are not necessarily aware of possible impacts that are not related to their field of expertise and therefore valuable information concerning e.g. weak signals can be ignored (Toivonen and Viitanen, 2016). Therefore in the workshops, all the impacts presented by the participants were accepted and placed on the wheels. A total of 70 participants took part in the workshops held for students while in the workshops for experts were 44 participants. The duration of the workshops was from 2 to 3 h and they were held during the years 2017–2019. At the beginning of the workshop, the researcher facilitating the event introduced the futures wheel method to the participants. After that, the participants were divided into groups of 4–6 persons. Each of the groups could choose a topic to be studied by the wheel among some given phenomena of the real estate market. Each group formed a visual wheel illustrating the recognized impacts of different levels with a pen on a large paper. After the wheels with the recognized impacts were formed, their content was discussed together among all workshop participants.

4.2 Step 2: Questionnaire of user experiences

To conclude the workshop, all participants responded to a questionnaire studying their user experiences concerning the futures wheel method. A qualitative research approach was applied for the questionnaire while the preliminary investigations conducted earlier by the research team had indicated a very positive and enthusiastic attitude among participants using the wheel. By incorporating open questions, the aim was to focus and to study deeper

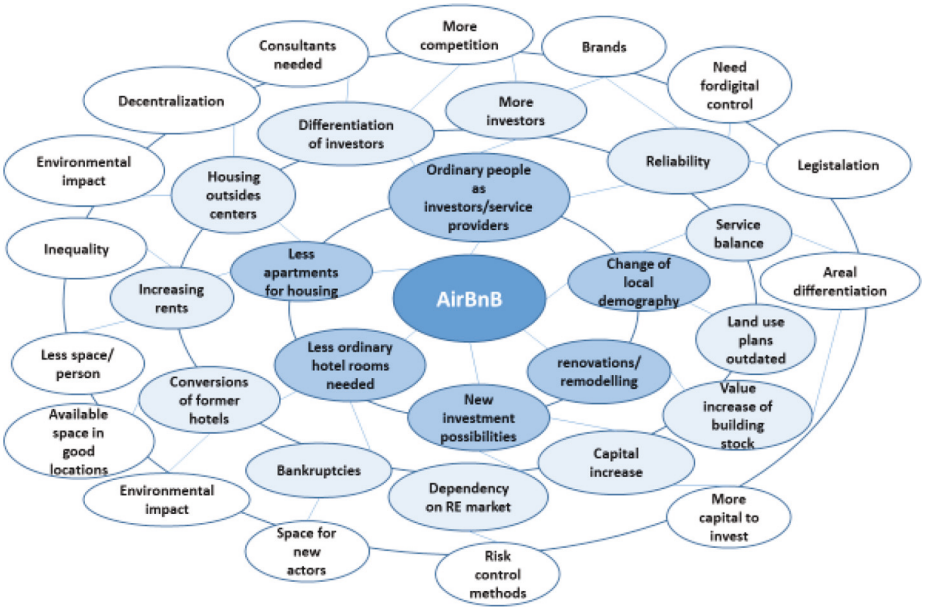

Figure 2.
An example of a futures wheel studying the possible impacts of AirBnB

especially the features that acted as the drivers behind the positive attitudes. The questionnaire included open questions under the following themes:

- The general impressions concerning the method after applying it.
- The benefits and disadvantages of the method.
- The potential topics that could be studied with the method.
- The importance of futures thinking in the real estate field.
- The views concerning the inclusion of futures studies to curricula.
- The intention to use the method later.

4.3 Step 3: Suitability and usability analysis

During Step 3, the questionnaire results gained during Step 2 were analyzed through a suitability and usability framework. The framework was formed based on the theoretical background and on the previous studies discussing different elements relevant when analyzing the potential of the futures wheel method to be implemented in the field of real estate to assist and enhance future-oriented thinking and decision-making. The framework includes four main themes (Table 1):

(1) Foreseeing and discovering the future,

(2) Understanding and demonstrating the future,

(3) Practicalities and

(4) Further use and supporting framework.

Theme 1 (Foreseeing and discovering the future) describes the capacity of the futures wheel method to identify possible and potential impacts and to create alternate scenarios (Glenn, 2009; Toivonen, 2011; Toivonen and Viitanen, 2016). Theme 2 (Understanding and demonstrating the future) sees the capacity of the method to assist in understanding the complex networks of causal relationships (Toivonen, 2011; Toivonen and Viitanen, 2016; Benckendorff, 2007; Boujaoude, 2000; Glenn, 2009). Theme 3, in turn, includes practical issues and limitations when using the method (Toivonen, 2011; Toivonen and Viitanen, 2016; Benckendorff, 2007; Bengston *et al.*, 2018; Boujaoude, 2000; Deal, 2002; Rantasila, 2015; Shakweer and Youssef, 2007). Themes 1, 2 and 3 were discussed in detail in Chapter 3.

Theme 4 (Future use and supporting framework) was seen as important while it discovers the different prerequisites that are essential when aiming to enhance the use of the futures wheel method. Futures-consciousness was seen as important while it acts as a motivation and as a prerequisite for future-oriented behavior (Slaughter, 1998) and therefore

Table 1. The framework analyzing the suitability and the usability of the futures wheel method

The suitability and the usability of the futures wheel method			
1) Foreseeing and discovering the future	2) Understanding and demonstrating the future	3) Practicalities	4) Further use and supporting framework
Possible impacts	Organizing thoughts	Practical process	Futures-consciousness
Potential and desired impacts	Demonstrating complex interrelationships	Participants	Inclusion in curriculum
Alternate scenarios	Expressing other futures studies and developing multi-concepts	Suitable topics	Implementation in practice

it was included in the framework. Another essential prerequisite is the needed skills and know-how concerning futures studies methods. Previous literature concerning the content and the limitations of the real estate curriculum were presented and discussed in Section 2. The inclusion of futures studies in the real estate curriculum can be seen as another relevant prerequisite when aiming to enhance futures thinking skills and therefore the views of the participants concerning this were seen as relevant. Previous literature did not deeply discuss the practical implementation of futures thinking or futures studies methods in the daily business sector activities. However, in this study, the user experiences and the motivations concerning the practical implementation were seen as important while the suitability and the usability of the method eventually culminates and fulfills there.

5. Results

The usability and the suitability of the futures wheel method were analyzed through a framework including four themes:

(1) Foreseeing and discovering the future;

(2) Understanding and demonstrating the future;

(3) Practicalities; and

(4) Further use and supporting framework (Table 2).

Each theme includes elements which are derived from the questionnaire answers of the master's level students and the experts. In general, the views of the respondents were positive and aligned and only a few differences were found. None of the participants was familiar with the future wheel method before but it seemed to be easier for the students than for the experts to adopt and apply the method by themselves.

When comparing the questionnaire results to the theoretical background and the previous studies, many similarities can be found. According to the results, the capacity of the futures wheel method in developing holistic future perspectives, discovering new possibilities and understanding and organizing causal relationships seems to be appreciated. Only a few negative elements were named concerning suitability and usability. According to the students, the biggest disadvantage of the method was its dependence on the participants forming the wheel which could in their view potentially endanger the scientific reliability of the wheel. In turn, the experts saw the delineation of the impacts as the biggest challenge and did not question the opinions of the participants forming the wheels. In addition, some of the issues that were seen negatively by the participants could also be seen as positive issues. For example, it was seen as a challenge that the wheel revealed also contradictory impacts. However, this capability can be valuable when preparing for future development. The questionnaire results especially highlight the capacity of the method to identify and create possible and potential future impacts of different phenomena. It not only discovers the different futures but most importantly assists in demonstrating simultaneously a holistic view of different impacts and their causal relationships. These are the benefits that are most often highlighted in the previous studies as well (Toivonen, 2011; Toivonen and Viitanen, 2016; Benckendorff, 2007; Boujaoude, 2000; Glenn, 2009). One interesting point that was mentioned by a student was that the visual wheel and its different tiers could be somewhat misleading. One might think that the impacts located on the same tier would also happen simultaneously in reality.

The issues concerning practicalities and supportiveness affecting the suitability and the usability of the method are also lined with the previous literature as demonstrated in Table 2 (Toivonen, 2011; Toivonen and Viitanen, 2016; Benckendorff, 2007; Bengston *et al.*, 2018;

The positive elements are market with + and the negative elements with −			
1) Foreseeing and discovering the future	2) Understanding and demonstrating the future	3) Practicalities	4) Further use and supporting framework
Possible impacts + identify and present different future impacts + create totally new viewpoints and ideas − all impacts will not be found	Organizing thoughts + clarifying and structuring different thoughts concerning the future − placing the impacts on correct tiers − contradictory impacts can be found	Practical process + logical, useful, practical and handy + independent of place + visual wheel − large and complex wheels − need a written or an oral explanation	Futures-consciousness + futures thinking is an important skill + possibilities for financial profits + minimize business risks + competitive advantage + adds agility in market behavior
Potential and desired impacts + to detect impacts of different probability + joint comparison of thoughts − further, validation might be needed	Demonstrating complex interrelationships + reveals and concretize causal relationships + demonstrates chronological order	Participants + among different people − dependence on participants (qualitative and quantitative) − resource consuming	Inclusion in curriculum + inclusion in a master's degree + inclusion in continuing education + a separate course + incorporated in several different courses
Alternate scenarios + deep view including simultaneously many different impacts + assist in choosing the needed action among different possibilities	Expressing other futures studies and developing multi-concepts + to form a holistic view, "the big picture" + possibility to compare your thoughts with others − challenge of delineation	Suitable topics + hardly any limitations + known and new phenomena + complicated and simple phenomena + strategic planning + quantitative and qualitative analysis + market dynamics + delineated target or wider societal issues	Implementation in practice + high motivation to implement in practice + high motivation to develop skills further + easy to incorporate in practice

Table 2.
The suitability and the usability of the futures wheel method

Boujaoude, 2000; Deal, 2002; Glenn, 2009; Rantasila, 2015; Shakweer and Youssef, 2007). When asked about the suitable topics that could be studied with the method, the most general reply was that it could be used in the study of multiple topics with hardly any limitations. The students noted that the method would be useful when studying either a phenomenon with wide impacts on different elements or a new phenomenon that did not yet show significant and recognized signs or when investigating the hidden impacts of well-known phenomena. Examples of certain research topics that were mentioned by the students included the impacts of new legislation, megatrends or development in the built environment, marketing topics, economic problems and economic behavior, the future of different space types, property evaluation, price development, impacts on communities and different phenomena in the society. Proposed potential topics by the experts included individual projects such as construction projects, products or different phenomena them being, for example, practical and simple everyday issues or relevant in a certain delineated

market environment. The method was also seen as helpful when doing strategic planning, preliminary go or no-go business decisions, quantitative analysis or other business development.

The last theme in the framework describes the different prerequisites. These prerequisites are important elements when studying the suitability and the usability of the method. According to the questionnaire results, the attitude of the respondents was very positive and they saw futures thinking as an important skill when working in the real estate field. The method was seen as suitable to enhance future-consciousness among participants and many practical benefits were named. According to the students, the beneficiary of futures thinking especially lies in the possibilities to gain financial profits and on the other hand to minimize the risks related to real estate investment in the long run. According to the experts, futures thinking is essential due to the long-life cycle of real estate and a rapidly changing market environment. They saw the future thinking skill as a competitive advantage to minimize risks and add agility to their market behavior. In addition, both the motivation to develop future studies skills and the further intention to use the method in practice were high among participants. The respondents were keen to see futures studies as a part of real estate curricula in university studies or continuing education curricula. This can be seen as a favorable starting point if and when implementing the futures studies as an element to the real estate curriculum.

6. Discussion

This paper aimed to study the user experiences of the real estate economics and built environment students and the market experts concerning the futures wheel method to investigate its suitability and usability in the real estate field. This was done through questionnaires that were implemented after the respondents had applied the future wheel method in groups. After that, the suitability and the usability of the method were analyzed through a framework based on the theoretical background and on the previous studies discussing different elements relevant when analyzing the potential of the futures wheel method to be implemented in the field of real estate to assist and enhance future-oriented thinking and decision-making. Next, the main points concerning the user experiences will be discussed.

Neither of the participant groups was familiar with the futures wheel method beforehand. The first impressions and attitudes concerning the futures wheel method were, in general, positive and interested. Adopting the method based solely on the introduction provided by the workshop facilitator seemed to be more challenging for the expert group than for the students. This might be due to better capabilities to use similar tools among the students while the experts might have been through a more traditional education during their study years with no existing knowledge of parallel techniques. This is in line with the notion that the student participants seemed to associate the futures wheel method with the mind map method. This strong association was not seen among the expert group. Also, learning skills might weaken when not practiced regularly so the basis for adopting new methods and tools might be better among students than among the experts. On the other hand, according to the first impressions in both groups, the method was seen as a concrete and useful way to identify and present different future impacts which are in line with the perceptions of Glenn (2009) and Toivonen and Viitanen (2016).

Concerning the benefits of the method, the views of the students and experts were unified. They both appreciated the method as a tool to clarify and structure the different thoughts concerning the future and causal relationships between different elements, to gain new viewpoints and to form a holistic picture concerning future development. Also, user-

friendliness and visuality were commended. These benefits are well-aligned with previous scholars Benckendorff (2007), Boujaoude (2000), Glenn (2009), Toivonen (2011) and Toivonen and Viitanen (2016). According to the respondents, the method helped to detect possible future impacts that would not have been thought of without using the futures wheel method. Similarly, the visual illustration of the method was seen as positive in both groups. The visual form of the wheel was seen to clarify and concretize the causal relationships in chronological order, stimulate new ideas and a holistic view. The method was also seen to assist working in groups. All these notions are in line with previous scholars such as Benckendorff (2007), Boujaoude (2000), Glenn (2009) and Toivonen (2011).

On the contrary, the opinions of the two participant groups departed from each other when concerning the disadvantages of the method. According to the students, the biggest disadvantage of the method was its dependence on the participants forming the wheel as also discussed in the theoretical part of the paper by Glenn (2009). The experts, in turn, saw the delineation of the impacts that would be chosen to be placed in the wheel as the biggest challenge concerning the method. These results indicate that the students are understandably more unsure of the capability of their fellow students and themselves to foresee the possible impacts as they do not yet possess extensive theoretical or empirical experience concerning the field and cannot rely on that in their views. The experts instead bear a wide and holistic view of the market environment as they have personally experienced many far-reaching consequences during their working career. This again explains the challenges in delineating the possible impacts selected for the wheel as they recognize the complexity and the breadth of phenomena. In short, the students seem to trust more the views of scientists and the experts the practical experience gained through a working career. This needs to be kept in mind so that the scientific background and the ways to ensure the reliability of the results via scientific and empirical sources will be demonstrated and highlighted when the method is introduced. The identified impacts can be based both on theoretical and/or on empirical justifications as stated by Linturi *et al.* (1998) and both quantitative and qualitative data can be benefited when forming and validating the wheels. On the other hand, the practical challenges concerning the drawing of the wheel were similar in both groups and they are easily tackled with proper preparation.

One interesting point that was mentioned by a participant was that the impacts located on the same tier would not necessarily happen simultaneously in reality even though it would visually appear so. In addition to the timing, the duration (e.g. short, medium and long term) and the probability, the magnitude (meaningless noise-significant) and the extent (delineation e.g. certain actors or real estate types) of the impacts located on the same tier can differ. These issues should be considered when developing the method further. Quantitative approaches could be incorporated when analyzing impacts. For example, the probability and the magnitude of impacts could be quantified by participants and reflected visually in the wheels e.g. trough size or use of colors.

The suitable topics that could be studied with the method mentioned by the respondents strengthened the view proposed earlier in the paper. The method is seen to suit the study of many different real estate fields-related research topics broadly as the method itself gives hardly any limitations. This is also seen when comparing the different phenomena that the workshop's participants were analyzed in their wheels. Their views according to the suitability and the usability of the futures wheel method were uniform despite the different nature of investigated phenomena. Both groups were able to name certain research topics that could be studied with the method. The proposed topics of the experts had a more identified and practical orientation while the students named wider elements of the built environment with a more theoretical approach. This is understandable when taking into

account the background of the respondents and echoes the same message as the notions presented earlier concerning the differences among the opinions of the two participant groups.

The fear that was brought forward in the questionnaires that the futures wheel method is not able to detect all the possible impacts have been discussed also by futures researchers. According to them, it will not even be possible to form a perfect forecast including all the possible impacts and development paths (Bell, 2003; Gordon, 1992; Jarva, 1993). However, this does not mean that the forecast is failed or that the presented development paths can be arbitrary proposals but they should first be seen as possible ones (Hiltunen, 2010) and second based on theoretical and empirical justifications (Linturi *et al.*, 1998).

The respondents saw futures thinking as an important skill when working in the real estate field and were keen to see it as a part of real estate curricula in university studies or in continuing education curricula. Both groups also estimated that they will continue to use the method later when working in the real estate sector. This again confirms the suitability and the usability of the method to be used in practice in the real estate field and is in line with the notions of other scholars concerning the short adoption time of the method as discussed earlier in the paper. Also, this can be seen as a clear advantage of the method.

Ensuring sustainable decision-making in the real estate field would benefit not only the real estate market environment and its participants but also the whole surrounding society due to the scope, magnitude and versatility of impacts caused by real estate. Futures thinking can be seen as essential when aiming for sustainable decisions and therefore, it should be an essential part of the diverse skillset required from a future real estate practitioner. As discussed at the beginning of the paper, real estate education should not be stable but rather respond to the forces of change in the industry to improve the profession. Charles (2016) highlights the necessity to incorporate new teaching methods into real estate studies that would demonstrate the multitude of involved factors and the interrelated issues between the elements. The results of this paper show that the futures wheel method bears great potential to be used more widely in real estate education than it has been until now. Futures thinking and the futures wheel method could be adapted to both real estate curricula at the university level and to continuing education programs to strengthen the needed capability to foresee the future development in the real estate field. The results also indicate that the method is easily adopted by the participants in considerably short time duration. The method is also cost-efficient while it does not require any special equipment or facilities and is practice-oriented. The method could be incorporated as a part of many different courses, as the method is suitable for a variety of topics. The method could be used to study and demonstrate the impacts of different decisions related to real estate. For example, students could study the impacts of different decisions concerning land use planning, investment decisions, sustainability renovations, digital solutions or location choices. The method is also ideal when aiming to show the complexity of the real estate market environment and the contradictory relationships between different market actors. Sessions introducing futures thinking and its methods could also be conducted online which would increase global interaction but also save resources. All these issues further the inclusion of the method into the real estate curriculum.

When interpreting the results, the sample size should be noted. The questionnaire results do not present the overall views of the different real estate market actors but just recognizes the opinions noted by those who were involved in this study. However, the unity of the opinions both between the two different participant groups and with previous literature indicates that the clearest factors affecting the suitability of the method to be applied in the real estate field were discovered. On the other hand, the differences in the views of the

experts and the students could be seen to derive from their background. The respondents were encouraged to express their views freely while anonymity was guaranteed to them. This can be seen to enhance the reliability of the gained results. On the other hand, the presented questions and responses included some repetition. For example, the similar replies concerning the general impression, the advantages and the disadvantages were repeated and no inconsistency in the responses was found in any way. This study gives several indications that the futures wheel method could be suitable to use in other built environment contexts although this was not tested as such.

7. Conclusions

Real estate education should not be seen as stable but rather ever-evolving as the real estate market environment itself is. Constant changes and increasing complexity of the real estate market environment call after real estate professionals that can see further in time and analyze and hopefully promote the wanted futures and prevent the unwanted ones. According to the results, the futures wheel method can assist in futures thinking. We see that incorporating futures studies would advance the real estate curriculum and therefore enhance more sustainable decision-making in the real estate field. This paper adds to the existing literature by increasing the understanding of the suitability and the usability of the futures wheel method and the relevant prerequisites when aiming to enhance future perspectives in the real estate field.

In the future, the adoption of the futures studies methods to the curriculum at different levels could be studied with more concrete and practical orientation. This could be done e.g. through case studies or quantitative research methods. One interesting point would be to see if the adoption of the curriculum is more fruitful when incorporated within other courses or should futures thinking to be preferably taught through a separate course. Also, follow-up studies investigating e.g. the practical implementation of the method would give valuable information about its actual usability. Other interesting research topics concerning the method itself would be its dependency on the participants forming the wheel and its capability to detect the possible impacts holistically. These findings could again strengthen the status of the method in the eyes of real estate market participants and therefore pace the adoption of the method.

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