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Towards a New Business Model Canvas for Platform Businesses in Two-Sided Markets

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Abstract

The ambition of this paper is to increase the understanding of digital platform businesses and business model innovation in the context two-sided markets. A proposal for an instructive new business model canvas is developed by combining abductive reasoning with insights from a case study. The case was a unique driving school platform under the employee and professional service platforms. The proposed canvas builds upon Scholten's canvas for platform businesses, complementing it with changes in terminology and the addition of new elements. The contribution of the paper derives from the insights provided by the case study and the identification of a new tool that can help platform businesses innovate in two-sided markets.

Introduction

Digital platforms in two-sided markets are capturing the market from incumbent companies by challenging the present structures, services and business models (Cusumano, Kahl and Suarez., 2015; Parker, Van Alstyne and Choudary, 2016; Salmela and Nurkka, 2018). A platform business is based primarily on innovative business models that create greater value for stakeholders than traditional models do (Parker *et al.*, 2016; Scholten and Scholten, 2012). A two-sided platform business differs from a traditional one-sided value chain business. In a two-sided platform business, growth does not come from vertical and horizontal integration but from network orchestration that results in network effects. Instead of owning resources, the focus is on using external resources. In a two-sided platform business, the user ecosystem is a source of competitive advantage (Parker *et al.*, 2016).

Osterwalder and Pigneur (2010) originally developed the widely embraced Business Model Canvas (BMC) to support the innovation of digital business models. However, their canvas focuses on traditional value chains. The platform

Keywords: digital platform; two-sided market; business model innovation; canvas; driving school.

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business models in two-sided markets differ from the business models of value chains in one-sided markets, which led us to examine whether a different business model canvas should be used for the innovation of platform businesses in two-sided markets. In our literature search we encountered Scholten's (2016) modified business model canvas for platform businesses in two-sided markets, which he has tested on a few platform cases. The case study that informs this paper resulted in suggesting improvements to Scholten's modified canvas for digital platform businesses in two-sided markets, and aims to answer the following research question: *what kind of business model canvas is most suitable for the innovation of platform business models in two-sided markets*?

The choice of Scholten's modified canvas as a key focus for this study was supported by the research results of Parker *et al*. (2016). Their study examined the platform business in detail and incorporated the same elements as Scholten's canvas. Wortmann, Ellermann and Dumitrescu. (2020) have also analysed digital platforms and utilised Scholten's canvas as one example of a potential tool. In order to pursue the present study, an abductive approach and a case study were combined to suggest improvements for the current business model canvas (Dubois and Gadde, 2002) by comparing the canvases and presenting development ideas. The empirical case that informs the present paper is the Finnish digital driving school, Ratti.fi (hereafter Ratti), which matches people who require driving licences with people who provide driving instruction. Ratti competed against traditional driving schools, which operate in one-sided markets. Unfortunately, the company ceased operations in 2018 due to a change in legislation.

This paper is structured as follows: section 2 presents the relevant prior theoretical knowledge, while section 3 describes the study's research design, including an overview of the case company. In section 4 Ratti's business model is subjected to a comparative analysis. Section 5 the findings of the research are discussed leading to the identification of a new canvas to be used for platform businesses operating in two-sided markets. Finally, section 6 considers the main conclusions of the study and offers some brief suggestions for further research.

Theoretical overview of platform business and business model canvases

Business models and platform businesses

A business model is a visualisation describing how an enterprise operates, who is the customer, what does he/she value, and how to make money in the course of business (Magretta, 2002; Drucker, 1994). To create, deliver and capture value, a business model is a summary of how the company plans to redeem its value proposition to profitably serve its customers by leveraging its own and its partners' resources. A value proposition guides the creation of a new business model (Jaakkola and Hakanen, 2013; Nenonen and Storbacka, 2010; Osterwalder and Pigneur, 2010). After the value offering has been created for customers, further elements of the business model are created and verified. With those elements, the solution is made available to potential customers at a suitable price. Furthermore, cost-effective manufacturing and delivery are created (Osterwalder and Pigneur, 2010; Furr and Dyer, 2014).

This paper focuses on platform businesses. A platform is based in the digital technology environment, including the internet infrastructure, with services being constructed on it (Gawer, 2009). There are various types of business platforms such as employee and service platforms, of which Uber and Airbnb are the most famous examples. A platform makes money through capturing the value from the network effect, for example, by taking part of the transactions for itself and charging for the use of the platform. (Parker *et al.*, 2016; Scholten, 2016).

Platform businesses can be divided into one-sided and two-sided markets. A one-sided market is related to a traditional value chain business where bilateral exchanges follow a linear path as firms purchase material, manufacture components and assemble them into products that are sold to customers. In a two-sided platform business, interaction follows a triangular relationship as stakeholders first affiliate with the platform and then connect or trade using platform resources. The two sides are usually labelled customers and producers (Eisenmann, Parker and Van Alstyne, 2006; Hagiu and Wright, 2015; Parker and Van Alstyne,

2016). A two-sided market differs from a traditional value chain business in that the platform can receive revenue from both producers and customers (Parker *et al.*, 2016; Scholten, 2016).

Business models of platforms differ from those of traditional value chains in one-sided markets. Platforms are crucial to creating a cost-effective user experience and organising resources. The fundamental roles of a platform are to minimise transaction costs by matching customers and producers and to enable value creating exchanges that would not take place otherwise. A digital platform helps to scale business more efficiently than does a physical one (Evans, Hagiu and Schmalensee, 2006; Järvi and Kortelainen, 2011; Parker *et al.*, 2016).

Platforms capture the market from traditional operators thanks to their positive network effects. A two-sided network effect occurs when an increase in the number of people in a single user group increases the number of people in the other group. The growing number of people makes better matching possible; in other words, the customers' needs and the provider's offerings are more likely to meet. The more users, the more connection options between them. Negative network effects between different sides arise when demand and supply are not balanced or matching is difficult due to the heterogeneity of the user community. If there are too many negative effects, then people will reject or reduce the use of the platform (Parker *et al.*, 2016).

In a two-sided platform business, the platform typically does not own some crucial physical resource. This connects the platform business to the sharing economy (Parker *et al.*, 2016; Vogelsang, 2010).

The goal of business model innovation is to create and validate a strategy to go to the market being a source of competitive advantage (Teece, 2010) and enabling a long-term success (Bucherer, Eisert and Gassmann, 2012). Business model innovation may examine existing parts of a company's business model or visualise a new business model for to satisfy customer needs. Business model canvases are commonly used tools to innovate business models.

The Business Model Canvas (BMC)

To visualise a company's or product's value proposition, Osterwalder (2004) proposed a business model ontology for digital businesses. Subsequently Osterwalder and Pigneur (2010) refined this model to create the BMC, which incorporates various elements to be defined when considering a company's business: value propositions; customer segments; channels; customer relationships; revenue streams; key resources,; key activities; key partners; and cost structures. These elements form a holistic model as illustrated in figure 1.

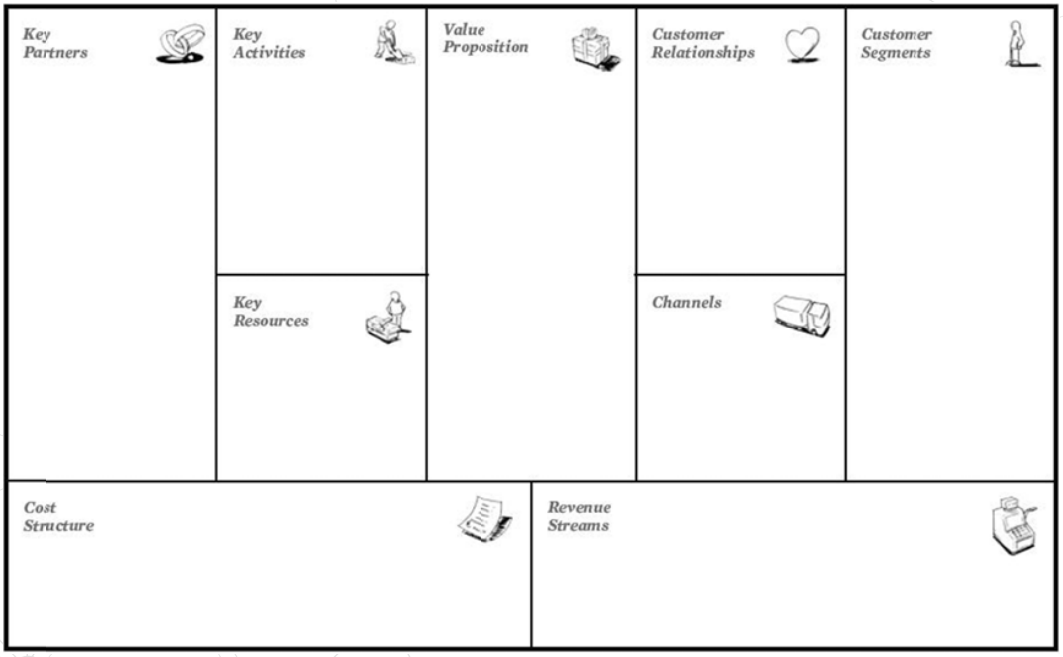

Figure 1: The business model canvas (Osterwalder & Pigneur, 2010).

Each of these components is now briefly outlined. **The Value Proposition** is that the bundle of products and services that create value for a specific customer segment. By means of a value proposition, a business endeavours to solve a customer problem or satisfy a customer need in a way that is different from competing value propositions. **Customer Segments** define the different groups of customers a business aims to reach and serve. When a company has identified its target customers, the appropriate business model requires to be based in a sound understanding of their customers' needs. Via **Channels,** the value propositions are delivered to customers through distribution, sales channels and communication forming a company's interface with the customers. The customers get to know company's products and services through channels, which in turn help customers to evaluate a company's value proposition. **Customer Relationships** relate to the types of relationships a business has identified are required by specific customer segments. Customer relationships are usually connected to boosting sales, customer acquisition and retention. Customer relationships are intended to influence the overall customer experience.

The element of **Revenue Streams** symbolizes the cash a company generates from each customer segment. If a company has many customer segments, a company needs to specify what value each customer segment is willing to pay.

Key Resources makes a business model to work. Key resources enable a company to create and offer a value proposition, to reach markets, attend to relationships with customer segments, and earn revenues. While the key resources make the business model to work, **Key Activities** are those actions that enable the business to operate successfully. When determining key activities, the requirement of value proposition, distribution channels, customer relationships and revenue streams are highlighted as important elements together with the designated key resources. **Key Partnerships** are formed through the network of supplier and partners making the business model to work. Partnerships have become important parts of companies' business models, and therefore, the companies establish different collaborations and cooperation to acquire resources, reduce risks, or optimize business models and its operations.

The final element is termed **Cost Structure**. The cost structure describes all the costs caused in a particular business model. The cost structure depends on the type of business model, and costs should be minimized in every business model.

Scholten's Two-sided platform business model canvas

Osterwalder and Pigneur's BMC provides a tool for innovating business models for value chains or pipelines. However, this canvas is not applicable to the innovation of business models for digital platforms in a two-sided market (Scholten, 2016). To address this, Scholten (2016) proposed a modified canvas (figure 2) to enable the creation of platform business models. He appears to combine the results of Parker *et al.*'s (2016) platform business research and the BMC created by Osterwalder and Pigneur (2010).

In Scholten's modified canvas, **producers and customers** are the main user groups in a two-sided market. This platform offers these groups value. Role changes are also possible. The customer can periodically be a producer and vice versa (Eckhardt, Houston, Jiang, Lamberton, Rindfleisch and Zervas, 2019; Scholten, 2016; Parker *et al.*, 2016, Gabriel, Korczynski and Rieder, 2015). When designing a platform, it is important to first identify the core interaction, value unit (e.g., Airbnb's list of rental homes) and key user groups. The **core interaction** must be simple, attractive and value generating for users. Platforms encourage producers to create useful, relevant and interesting value units for customers. The platform does not necessarily create any value units at all. It also has no control over the production process of a product or service, which is a major difference from traditional value chain business (Parker *et al.*, 2016; Scholten, 2016).

Partners, filters, rules, and tools and services enable a successful core interaction. Partners provide additional services related to the core interaction. Filters help to match customers and producers – they

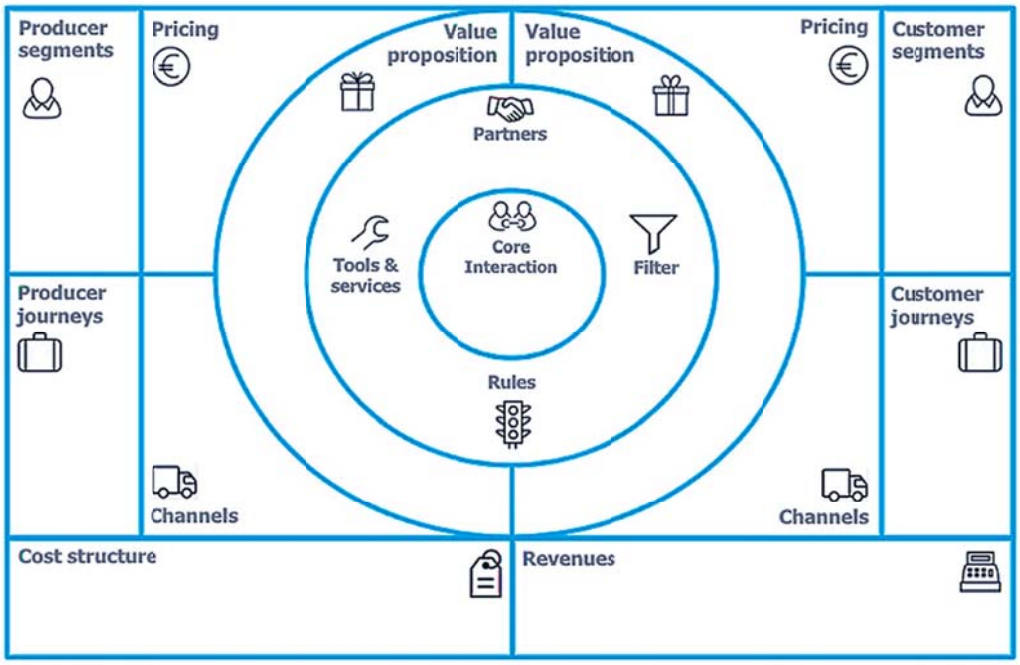

Figure 2: Business model canvas for digital platforms in two-sided markets (Scholten, 2016).

bring together the most suitable parties to create a successful interaction. For example, only relevant producers and their value units are shown for a particular customer. This prevents information overflow and facilitates decision making. Data and algorithms are used to match customers and producers. Tools and services are data-based tools that can create, for instance, loops of community feedback. The constant flow of interesting value units will bring people back and increase the number of users by creating a new value. User feedback helps to control the quality of interactions. In addition, users can recommend the platform to others. Facilitation tools help producers create and deliver high-quality outputs to customers as well as assist in producing marketing material (Parker *et al.*, 2016; Scholten, 2016).

The **rules** are used to orchestrate the ecosystem and guide people's behaviour. They determine who participates in the ecosystem, how the value is shared and how conflicts are resolved. In the platform economy, the platform partners create a significant part of the value, so the profits must be fairly shared. This is not easy because different user groups may have different interests. There will inevitably be conflicts, something clearly evident in Facebook's privacy policy. In addition, sanctions are defined if users act against the rules (Parker *et al.*, 2016; Scholten, 2016).

In the platform business, **revenues** can be made in the following main ways: 1) by charging a transaction fee, which is a percentage of the price or fixed fee; 2) by charging producers for access to customers or vice versa; 3) by charging for improved access to the platform (e.g., better targeted or more attractive messages for customers); or 4) by charging for higher quality than normal (e.g., offering exceptionally reliable child caregivers). The 'freemium business model' is also common (Parker *et al.*, 2016). The **pricing** element of the canvas describes the need to define how much customers or producers are willing to pay for the relevant services. The **cost structure** presents the fixed and variable costs required to operate a business.

Channels refer to how and where a product is distributed and sold and how users are attracted to and engaged in the platform. The **customer journey** involves the customer's every interaction or touchpoint with the platform, product, service and brand before ordering, during the order-delivery process and after delivery. A comprehensive experience is formed when the customer is satisfied with the whole journey. The **producer journey** is like the customer journey but from the producer's point of view (Scholten, 2016; Osterwalder and Pigneur, 2010; Kim and Mauborgne, 2005).

Research design

A case study approach (Saunders, Lewis and Thornhill, 2007) was chosen because it allows a broad and in-depth examination of a single instance of the phenomenon of interest (Collis and Hussey, 2003), enhancing understanding of the case by describing the phenomenon in its real context (Yin, 2003) and binding the case by time and activity (Stake, 1995). In this research, the phenomenon under examination is the two-sided platform business.

Ratti, the case company informing this study, exhibits a business model in a two-sided market. Ratti was chosen because it was an innovative newcomer to the driving school sector and an illustrative example of a two-sided digital platform business. Ratti is an employee and professional service platform; this type of platform was chosen because such platforms can significantly change work life and people's earning possibilities (Parker *et al.*, 2016). The use of Ratti as a single case is justified because it is a unique digital driving school platform (Yin, 2003). Empirical data from Ratti were collected from public information found on the company website (www.ratti.fi), together with other digital information sources and from newspapers.

An abductive approach was used to suggest improvements for the existing business model canvas. Abduction is understood as systematised creativity or intuition in research designed to create novel knowledge (Taylor, Fisher and Dufresne 2002) and to escape already known constructs (Kirkeby, 1990). Intuition may result from an unexpected observation that cannot be explained using an existing theory (Andreewsky and Bourcier, 2000). For researchers, an abductive approach is useful for discovering other variables and relationships (Dubois and Gadde, 2002). An abductive approach is possible when observations are connected to a main idea or clue, and existing theory models alternate in the researchers' thinking (Tuomi and Sarajärvi, 2002) to refine existing theories rather than invent new ones (Kovács and Spens, 2005).

Kovács and Spens (2005) described the abductive research process as a continuous movement between empirical and theoretical issues. In the present study, empirical data about the digital driving school business model and theoretical knowledge of business model canvases provided the sources of inspiration to refine and combine existing theory. The main phases of the abductive research process are illustrated in figure 3. The discontinuous arrows represent the movements in canvas development.

In this study, we conducted four phases (0–3) of the abductive process to suggest improvements for the existing canvas, repeating phases 1 and 2 twice to refine the match between real-life observation and theoretical knowledge. The research process embedded in the abductive approach may begin with real-life observation (Alvesson and Sköldberg, 1994) or prior theoretical knowledge (Kovács and Spens,

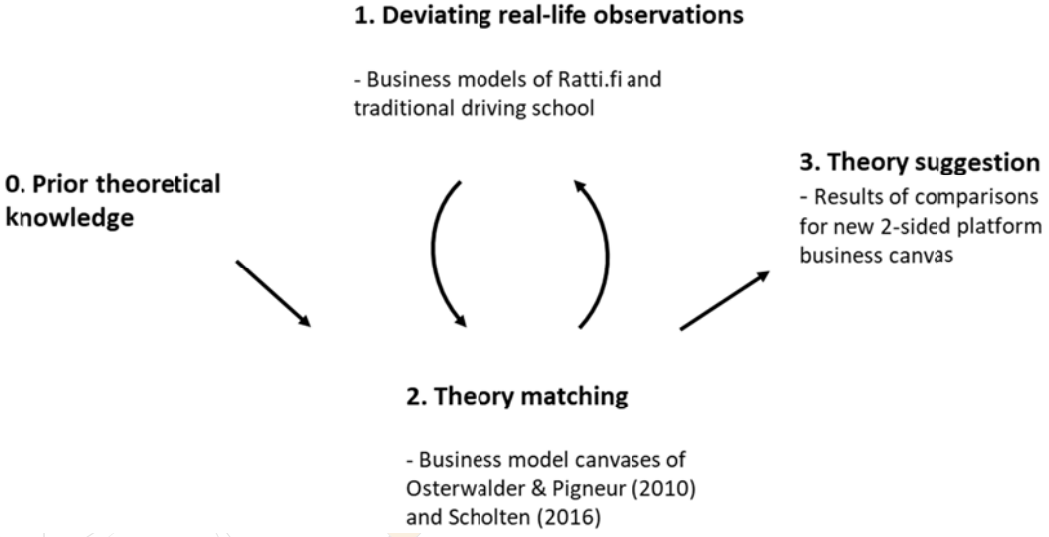

Figure 3: The abductive process of research applied in this study (modified from Kovács and Spens, 2005).

2005). As doctoral-level academic professionals in the fields of engineering and management, we had prior theoretical knowledge about business models in general and about their significance, which corresponds to phase 0 in the abductive process. This study started with real-life observation (phase 1) when the digital driving school Ratti entered the driving school business in Finland and aroused our interest in whether it would succeed in the markets. The platform business model of Ratti was entirely different from those of traditional driving schools. In our search for theoretical knowledge, we initially acknowledged Osterwalder and Pigneur's BMC as developed for digital businesses. The business model of Ratti was compared with their canvas. However, their canvas was designed for one-sided markets and is thus not suitable for two-sided platform businesses as we found out after testing.

In the theory search, we discovered Scholten's modified canvas, developed for two-sided platform businesses, and compared it with the Ratti business model (phase 2). In the comparison and analysis, we noticed an incomplete match between Scholten's theoretical model and Ratti's empirical business model (phase 1). This incomplete match led us to a second loop of theory matching in which we searched for novel theoretical elements to complement the existing canvas (phase 2).

After identifying the differences and similarities of existing business model canvases in comparison with Ratti business model, the research process ended with a theory suggestion in the form of improvement propositions for business model canvas for two-sided platform markets (phase 3).

The Ratti.fi case

This study began by gaining an understanding of the business logic of the Finnish driving school platform Ratti (officially "driving teacher brokerage service"), which was established in 2015 to compete against traditional driving schools. The platform took advantage of Finnish legislative reforms, which made it possible for teachers to teach three non-family students during three years. In the beginning, the platform operated in the Finnish market although the business had the ambition to evolve into an international operation. There are 70,000 driving school students in Finland each year, and Ratti was targeting half of the €120 million Finnish driving school market.

The Ratti platform match-makes driving teachers (producers) and students (customers), as shown in figure 4.

For students seeking a driving licence, Ratti's operations offered a value proposition for about half the price of a traditional driving school. A cheaper option naturally interests them. Teachers offer driving lessons for students and make money this way. The driving lessons are offered by teachers using own cars. Ratti pays teachers a fee for driving lessons. If a teacher teaches the maximum number of three students outside her family, she can earn €960 over a three-year period. Unfortunately this did not attract enough teachers, being Ratti's greatest problem, as a consequence of which many students did not receive a local driving teacher sufficiently rapidly. This reduced the students' willingness to join the platform. Hence, the network effect was negative.

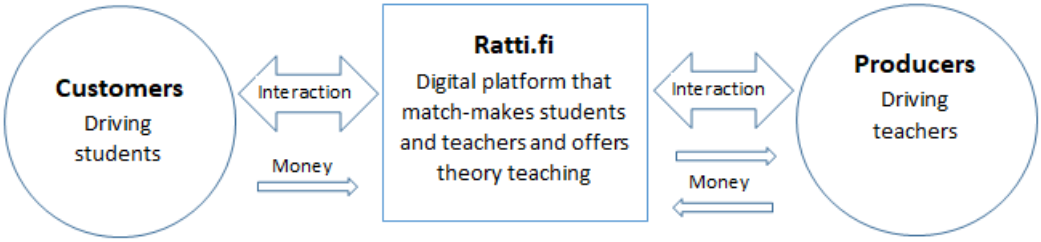

Figure 4: Ratti.fi platform two-sided market.

Ratti also offered theory lessons for students and, if necessary, also for teachers through the digital platform. Additionally, Ratti offered other services for teachers. Teachers can therefore be both producers and customers at the same time. Because of this, the figure 2 shows money flows in both directions regarding teachers. Ratti believed that the legislative limit of three students would be removed in a short time, which would provide instructors with more opportunities to earn money. If this limitation had been removed, teachers could have earned almost €3,000 per month by teaching 150 hours. This would have proved more attractive teachers. However, the opposite happened with the teaching of non-family students becoming banned through changes in legislation. Unfortunately, as a result, Ratti ceased operations in 2018.

A Comparative Analysis of Ratti's Business Model with Extant Alternative Visualisations

This section presents a number of observations regarding the business model in use by Ratti. First, differences between Ratti's business model and the traditional driving school model are presented. Second, the Ratti business model´s fit with Osterwalder and Pigneur's BMC is examined. Finally, Ratti is analysed using Scholten's platform business model canvas.

Differences between Ratti's business model and that of the traditional driving school

There are some significant differences (table 1) between the business models of traditional driving schools and that of Ratti. The identified differences are based on a content analysis of text descriptions about Ratti business model.

Ratti has outsourced the critical resources of traditional driving schools serving private individuals, namely driving instructors and cars. It also has no physical teaching and staff facilities. For these reasons, Ratti has considerably less fixed and investment costs, which permits a lower price for its customers. On the other hand, it does not have professional instructors and the quality of car supply is varied.

Compared to a traditional driving school Ratti has to attract a critical mass of instructors other than through a fixed salary. Teaching individuals to drive is just a source of additional income for instructors. In traditional driving schools the permanent staff receive a fixed salary. In consequence, teachers are usually quickly available for students. Furthermore, driving schools do not have the student quantity limitations that Ratti's teachers have. In addition to service producers, instructors are also customers who buy services from Ratti, such as theory lessons for themselves.

Ratti does not have its own quality control or a traditional management structure for monitoring instructors. Students who complete their driving license provide quality control insights through the feedback mechanism. Almost any person can become a driving instructor with Ratti, and is not required to exhibit the values and culture of a traditional driving school. For some students this provides an attractive option. However, for the majority of students, as well as their parents, a traditional driving school that has a history both as a way of working and also as a company offers a preferable alternative. As a new venture, Ratti is only able to rely on a relatively small stock of user experiences of the service. In addition, the absence of a bricks-and-mortar business estate is a concern for some potential clients. A new business model with low demand and little feedback causes doubts in people. A major attraction of Ratti, however, is that it offers a more flexible way to obtain a driving license because of the independence of time and place. There are no eight to four working hours and no need to go to driving school for theory classes. Ratti differentiated itself from traditional driving schools through its novel, youth-oriented marketing approach.

In summary, the core functions of a traditional driving school are to get customers and teach, while the core functions of Ratti is to achieve positive network effect and match-making; in other words, to create a critical and balanced mass of teachers and students, and to provide a local instructor for students. However, Ratti is not a pure platform for a two-sided market because it has its own theory teaching. Ratti also does not provide students with a list of instructors

Table 1.

Factor	Ratti.fi platform	Traditional driving school
Critical resources (driving teachers and cars)	Outsourced to citizens	Owned by driving school
Physical facilities	No need for them	For staff and theory teaching
Costs	Mainly variable	Mainly fixed
Salary for teachers	Additional income	Main income
Student quantity limitations for teacher	Yes	No
Customers	Students and teachers	Students
Quality control	External users	Driving school
Independence of place and time	Yes	No
Core functions	Positive network affect and matchmaking of student and teacher	Obtain customers (students) and teach driving and theory for them.

Table 1: Comparison of Ratti.fi platform and traditional driving school.

but selects the teacher itself. Because of the differences in business models between traditional driving schools and the Ratti platform, the question arose as to whether Osterwalder and Pigneur's BMC could be used for innovation exercises within a platform business such as Ratti.

Interfacing Ratti and the Business Model Canvas

The BMC was developed to support digital business innovation (Osterwalder and Pigneur, 2010) but at that time the object of innovation was value chain streamlining in one-sided markets. We examined how the traditional canvas fits with the two-sided platform business of Ratti. Based on this analysis, the traditional canvas would not appear to facilitate the innovation of two-sided platform business even if it can somehow describe that kind of business (figure 5).

The traditional canvas focuses on creating value within a company, while in two-sided market value is created outside the company. In other words, platforms do not themselves create value but

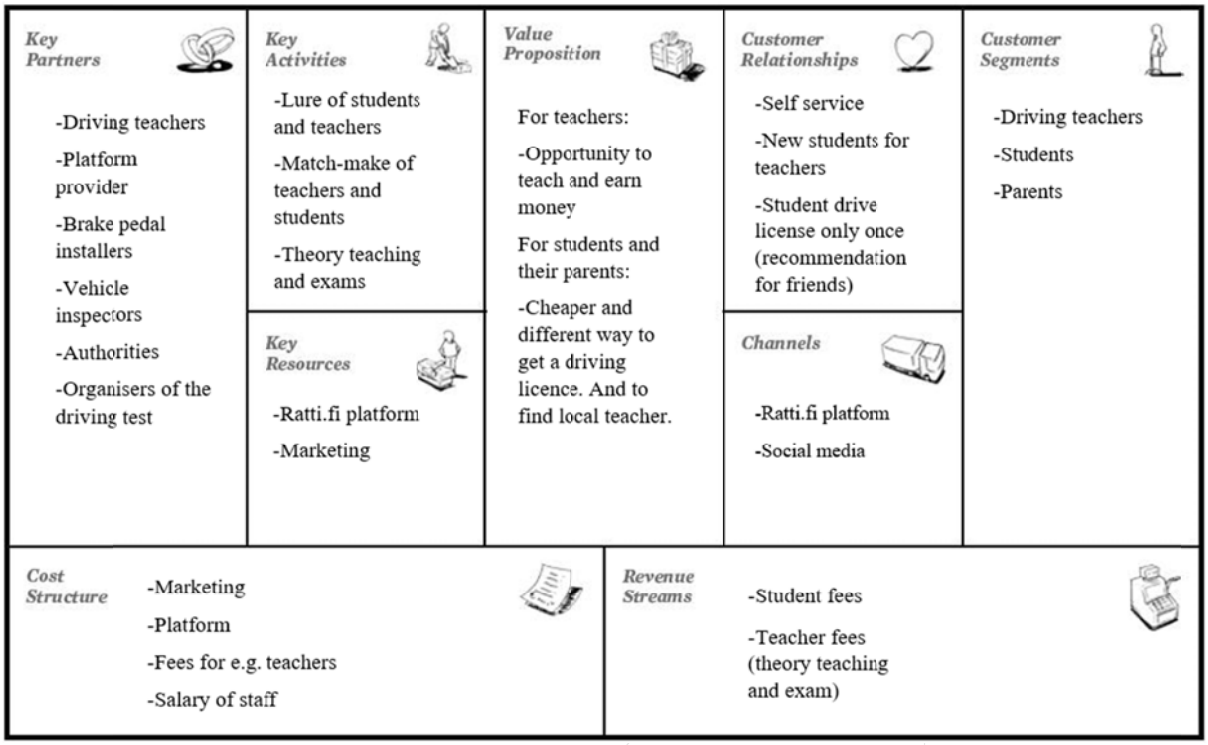

Figure 5: Ratti.fi in traditional business model canvas.

concentrate on matchmaking of customers and producers. Furthermore, producers are often private individuals rather than companies. Thus, there is a big difference in business logic, and it should also show up in the canvas. Scholten has also recognized this difference and developed a modified business model canvas for platform business of two-sided markets (Scholten, 2016).

Ratti in relation to Scholten's two-sided platform modified business model canvas

Within his modified canvas visualisation, Scholten emphasizes match-making between customers and producers. That is why he places core interaction in the centre of the canvas (see figure 2 above). Scholten also emphasizes the importance of filters, rules, and tools and services. Thus we sought to examine how Scholten´s modified canvas would help to innovate a business model like Ratti (table 2).

When comparing Ratti's business model with Scholten's modified canvas, we identified a series of improvement needs, which are discussed in following section.

Building on Scholten's Canvas to Better Facilitate Business Model Innovation

Based on the insight presented in the previous section, there are significant differences between the logic of Osterwalder and Pigneur's BMC and Scholten's modified canvas when applying them to a two-sided platform business such as the Ratti case. There are also some limitations or omissions in both canvases that are noted in earlier literature. According to Upward (2013), the BMC overemphasises economic value instead of paying attention to environmental and social value. Neither Osterwalder and Pigneur's canvas nor Scholten's modified canvas pay attention to the business environment, which plays a significant role in the success of a platform business. For example, a platform business is not appropriate in a heavily regulated industry (Parker *et al.*, 2016). In addition, Coes (2014) observes that a crucial limitation of Osterwalder and Pigneur's BMC is that it excludes competition.

Coes (2014) also notes that the value proposition building block is too abstract in Osterwalder's original Business Model Canvas and does not consider

Table 1.

Elements of canvas	Empirical data: Business model of Ratti.fi
Core interaction	Matchmaking of a driving teacher and student
Filter	Helps in finding a teacher from the same locality where the student lives
Rules	Teachers at least 25 years old, driving licence min 3 years and no major traffic offences. A maximum of three non-family students can be taught for 3 years. Driving teaching at least 18 hours per student. Money-back guarantee.
Tools & services	Transparent pass-through rates. Theory teaching and exams for teachers and students. Brake pedal installation and vehicle inspection for teachers.
Partners	Platform provider, brake pedal installers, vehicle inspectors, authorities and organisers of the driving test
Value proposition for producers	Additional incomes by teaching
Producer segments	Citizen teachers
Pricing for producers	Standard price for teaching. Theory teaching, exam, brake pedal installation and car inspection fees.
Channels for producers	Ratti.fi platform and social media
Producer journeys	From marketing to aftermarket mainly on the Internet. Face-to-face contact with students in driving lessons.
Value proposition for customers	Cheaper and different way to get a driving licence. To find a local driving teacher.
Customer segments	Students and their parents, who usually pay for driving school or part of it

Table 2: Ratti.fi in platform business model canvas

Table 1.	
Elements of canvas	**Empirical data: Business model of Ratti.fi**
Pricing for customers	Registration and driving licence fee
Channels for customers	Ratti.fi platform and social media
Customer journeys	From marketing to delivery mainly on the Internet. Face-to-face contact in driving lessons.
Cost structure	Payments for driving teachers, authority fees, slippery weather training fees (total approx €755 eur per license). In addition, other service fees for partners (e.g. marketing and platform) and wages for own personnel.
Revenues	€855 per driving licence, about €100 of which is commission. Additional revenues, such as theoretical education of teachers.

Table 2: Ratti.fi in platform business model canvas *(Continued)*

how a business satisfies the customers' needs. Osterwalder, Pigneur, Bernada and Smith (2014) attempted to rectify this by adding the 'value proposition canvas', formerly called 'The Customer Value Map V.0.8'. This allowed the alignment between customer needs and a value proposition could be analysed more efficiently.

Based on the findings of our research, neither the Osterwalder and Pigneur BMC nor Scholten's modified canvas is of much use when innovating platform business models for two-sided markets. The matchmaking activity in the two-sided markets differs remarkably from traditional value chain business. The elements of core interaction, filters, tools and rules are important canvas elements in supporting innovation for two-sided markets. Without these elements, innovation would focus only on enhancing the efficiency of traditional value chains. Nevertheless, Scholten's modified canvas does not seem to support innovation in an optimal way in platform business for two-sided markets, because it either lacks essential elements or elements are misleadingly named. In order to address these limitations, the following suggestions are designed to further enhance Scholten's canvas:

- When designing a platform, it is important to first identify the core interaction and then design the participants, value units, and filters that will allow for a successful core interaction. (Parker *et al.*, 2016). Scholten's canvas lacks a value unit (e.g. in Ratti this is a list of local teachers).
- Scholten's canvas does not pay attention to the network effect, i.e., how to attract actors to both sides of the platform and make the first interaction, which leaves such a good experience that they want to come again. (Parker *et al.*, 2016). Therefore, we propose adding to canvas an element of network effect tactics.

- Scholten's canvas lacks an element to identify the key resources to be outsourced. In other words, what part of the business in the industry entails a lot of fixed and investments costs and could citizens or some other party provide this part with sufficient quality.
- In Scholten's canvas, the term producer does not adequately describe the role of the players, because they may also be customers at the same time. Therefore, the concept of prosumer can work better in the two-sided markets context (Eckhardt *et al.*, 2019; Gabriel *et al.*, 2015)
- The lower part of Scholten's canvas (cost structure and revenues) is not precise because there is also income from producers (prosumers).

Figure 6 incorporates the above suggestions to fabricate an enhanced business model canvas for platform business models.

Furthermore, we recommend the following steps when applying the novel canvas for creating new platform business models. *Step 1* involves planning the core interaction where the platform match-makes a prosumer and a customer to create and deliver value. Central to this phase are also the definition of the value unit (what customers buy), user groups (who are prosumers and customers), filter (how to match-make prosumer and customer), network effect tactics (how to increase the number of users on both sides of the markets) and the critical resource to be outsourced (what fixed and investment cost resources could be provided by prosumers). First versions of value proposals (what new value platform could deliver compared to existing offerings) for prosumers and customers should also be made at this phase in order to attract the users to the first experiment.

Step 2 is termed value validation in which business potential is identified. In this phase, an experiment is carried out. For the experiment, a so-called rapid platform prototype is created. The purpose of the prototype is to concretize the platform idea and provide a user experience so that the value created for

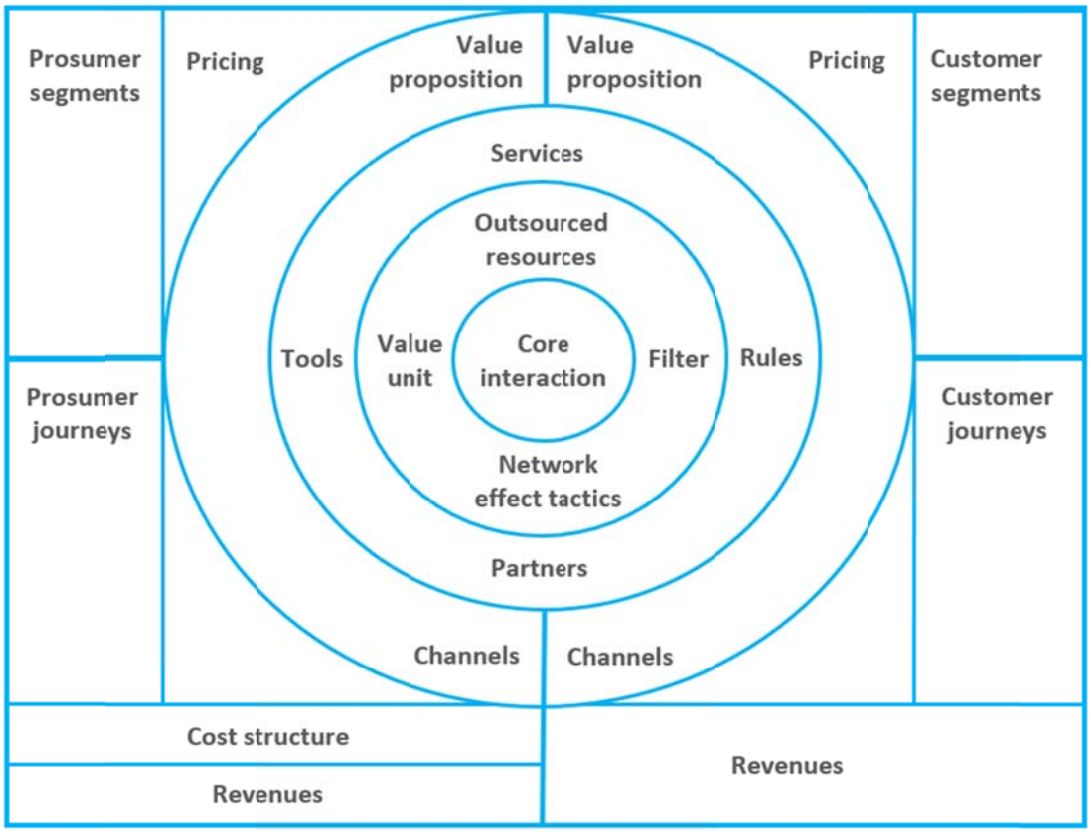

Figure 6: Suggested new canvas for two-sided platform business model innovation.

different parties can be determined. Rapid prototype means the minimum version at which a user experience can be generated. For example, the filters are not automated algorithms, since a human takes care of match-making a prosumer and customer. The first experiment can be done with a very limited number of users - even with a single prosumer and customer. The experiment is repeated several times if necessary. Between experiments, some element (for example, value unit) is changed to achieve a better result - in other words, more value for platform, costumer and prosumer. On the other hand, if inadequate value seems to be created for all parties, the platform idea should be abandoned.

If the value is significantly higher than in the industry´s existing solutions, then in *step 3* the platform business should be further developed. At this stage, support services are developed and suitable partners sought, as well as rules and tools to promote value creation. In addition, value propositions are specified and pricing and earnings logic are built. Network effect tactics are particularly important to lure and engage a critical mass of users on both sides of markets. For example, channel selections, value propositions and pricing principles are closely related to this. At this time, several experiments are needed to attract users.

When the critical mass has been reached, *step 4* requires the operation to be intensified and streamlined e.g., by creating automated processes, the main goal being to move towards a profitable business. At *the final step*, the customer and prosumer journeys are examined in order to find new potential core interactions and value units to create additional value. After this, the process repeats, starting with *step 1*.

Concluding Observations

This paper sought to increase the understanding of digital platform businesses and business model innovation in two-sided markets. The findings of the research undertaken revealed that two-sided platform businesses require a further reconstructed business model canvas; thus, we proposed a novel platform business model canvas that supports the innovation of platform business models in two-sided markets. In answer to the research question: *what kind of business model canvas is most suitable for the innovation of platform business models in two-sided markets?*, we conclude that the following elements are needed in a business model canvas:

- Defining a value unit
- Defining the key resources to be outsourced
- Planning network effect tactics
- Renaming producers as prosumers
- Paying attention to revenues also from the producer/prosumer side

These refinements will enable innovating two-sided platform business models with higher accuracy and details corresponding the real-life situation, and also highlight the differences of traditional and platform business models.

The contributions of made in this paper can be recognized from multiple theoretical viewpoints. First, the paper contributes to the platform business discussion in the literature by providing empirical understanding of platform businesses derived from a case example. Second, the paper contributes to the growing literature on business models and especially how they might be successfully innovated. Although extant business model canvases have been found to be an effective tool for this purpose, as a result of our study we are proposing some improvements to the existing canvases to better take into account the differences between two-sided platform business models and traditional business models. In addition, the abductive research process applied in this study can generate new knowledge for digital markets.

The proposed canvas can help practitioners to systematically develop their business models and to create new platform business models for two-sided markets. It will assist managers to identify the core elements for value creation from both customer and producer sides and enables focusing on the critical aspects of business model creation. The proposed model was created by studying an employee and

professional service platform but it can also be used in innovating other types of platforms in different industries or even in the public sector services. The canvas tool can also be utilized for comparisons between different business models.

The proposed canvas was developed with the help of abductive logic and the case study of Ratti a business that incorporated an employee and professional service platform. The new canvas could be applicable to analyse these kind of business platforms. However, more research is needed to gain greater insights into possible canvas applications, which entails applying the proposed canvas in practice. In addition, the applicability of the new business model canvas should be tested on other types of online platforms in future studies and the implementation process of the proposed canvas improvements should be tested in a follow-up study. As this study covered one case example in one industry, and was carried out employing one methodological approach, there are many possibilities for further research by broadening the scope of empirical cases and by including multiple complementary methods such as systematic literature review, survey or interviews.

Possible topics for future research are the changes in people's values and analysing other environmental issues – for example, how well existing services respond to changing appreciations and how e.g. new technology could be used within the context of these changing appreciations.

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