

# Mapping of Electronic Marketplace Business Model in Building Urban Electronic Marketplace

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**Abstract**—This Research is aiming to map out a specific e-marketplace business model for urban-rural communities. The concentrated use of business electronics in major cities in Indonesia is one of the major factors in the low adoption of electronic business in urban-rural areas. The survey results of the Indonesian Internet User Survey Institute said the number of internet users in urban-rural and rural areas by 2017 accounted for nearly 50% of the urban-rural population. This is because the infrastructure for Internet users in urban-rural areas is sufficient. Research method is done by approach of Platform Design Toolkit (PDT) and SWOT analysis to generate alternative strategy for urban-rural market. From this research obtained a business blueprint model e-marketplace which is one of urban platforms in urban e-marketplace. Business model mapping is done on nine elements of PDT through four stages: mapping entities in the Canvas Ecosystem; Find out the benefits and potentials in the Ecosystem Motivation matrix; maps the key value units and "currencies" that are exchanged by entities with Transaction Board; The Canvas Learning Experience to reflect the types of services and opportunities for what the Platform offers to Partners and People. Business processes and transacted products will be able to increase the effectiveness and efficiency optimally so as to improve the urban economy itself.

**Keywords**—model, mapping, urban, e-marketplace, platform design toolkit

## I. INTRODUCTION

The results of a research predict that until 2020 the number of consumers who spend money to buy goods and services compared to basic needs (consumer class) will grow significantly in Indonesia. This type of consumer will develop a digital lifestyle because the technology industry is encouraging them to use more than one device [1]. E-commerce through the startup movement that many popping up to date is directly proportional to internet users in Indonesia which reached 143.26 million from 262 million Indonesian population with a percentage of 54.68% where 45.14% is dominated by public search prices and 16, 83% in use by entrepreneurs (business) in selling online [2]. Viewed from the above data opportunities in building e-commerce is still wide open to applied rural and even urban-rural areas such as Sungai Penuh City located in the province of Jambi. Building an e-commerce requires an innovative business model and a sustainable business model essential to building

a sustainable IoT paradigm [3]. The essence of each e-marketplace is represented by a demand and inventory adjustment process. "Matchmaking is the process of finding the appropriate space between demand and supply"[4].

A conceptual framework from Matchmaker for B2B e-marketplaces. We must specify methods to describe the terms for the buyer and the good offer for the seller [5]. Conducting empirical research in analyzing some of the most revolutionary business model innovations in the last 50 years to determine the systematic and predictable patterns that form the core of business model innovation. The Platform Design Toolkit is a modified version of the Canvas Business Model[7]. Analyzing the property business model in Indonesia by using the Platform Design Toolkit framework to map stakeholder business models engaged in property in Indonesia so that it is known who is the orientation of an online property platform, more towards partner, consumer, or producer [8]. Map the public business model of e-marketplace in Indonesia using the Platform Design Toolkit (PDT) to get the conclusion that the public e-marketplace business climate in Indonesia is quite promising for investors. The result of his research is a large map of the public e-marketplace platform business model in accordance with PDT's perspective [9].

The focus of this research is to map the business model that is used by an urban-rural e-marketplace platform in Indonesia. This research can be used to find out who is the orientation of an e-marketplace platform. In the previous study no one specifically discussed the public e-marketplace for smaller regions, namely urban-rural. The purpose of this study was to map the business model in building e-marketplace platforms for urban-rural areas. To support the research process, the author uses the framework The Platform Design Toolkit. this framework can map business processes, market needs and the technology needed in a platform. The mapping results in the form of a large map of the urban-rural e-marketplace business model.

## II. METHOD

### A. Platform

The platform is a governance structure that can determine who actors are participating, the role of the actors being played, how each actor interacts, and how to solve

problems and to facilitate relationships, coordination and collaboration [10]. In this study, the platform is a business model that makes producers and consumers can interact with an infrastructure that can bridge the relationship between the two [11].

### *B. Platform Design Toolkit v.2*

The Platform Design Toolkit is a concept created by Simon Ciero and his team. The Platform Design Toolkit is a modification of the framework business model canvas made by Alexander Osterwalder. The purpose of the Platform Design Toolkit is as a language that can describe and manipulate a platform model in order to think of alternative strategies for the platform. This study uses the Platform Design Toolkit because the framework can see a platform strategy in general. so it can compare what blocks make open source ERP software superior to others. There are 9 blocks in the Platform Design Toolkit v.2 namely Platform owner, Platform stakeholders, Peers, Partners, Transactions, Channel and Context, Services, Value propositions, Infrastructure and Core Components [12].

### *C. Type of Research*

Method of Selection Data collection conducted by researchers is only supporting data. Data collection methods carried out in this study were divided into two parts, in qualitative research researchers used interview data collection methods and quantitative research using questionnaire data collection methods. The collection of supporting data is needed to see the possibility of research on business models of rural e-marketplace both primary and secondary.

#### *1) Primary Data*

Primary data is data obtained directly from the source or object of research. Primary data is usually obtained by direct interviews with objects or by filling out questionnaires (questionnaires) that are answered by the research object [13]. The fulfillment of primary data is carried out by conducting a field survey by giving questions to potential consumers so that the possibility of product and market segments is visible.

#### *2) Secondary Data*

Secondary data is data that has been published or used by other parties. Examples of secondary data are data taken from newspapers, magazines, journals, and other publications. Secondary data used in writing this business plan comes from the existing cafe business plan literature[13]. Measurement and research variables are basically anything in the form of what is set by the researchers to learn so obtained information about it, then drawn conclusions[15].

### *D. Data Analysis Methodology*

Qualitative research methods, according to Creswell there are five qualitative strategies, one of which is used by researchers is a case study. Case study is a research strategy in which researchers carefully investigate a program, event, activity, process, or group of individuals [14]. The triangulation approach is used to test the validity of the data and find the true objective truth. This strategy is very appropriate for analyzing certain events in a certain place and at certain times.

#### *1) Empathy Map*

In this analysis the researcher will conduct a survey to several respondents related to Supply ie Partner (P) and Peer Producer (PP) and Demand ie Peer Customer (PC) by proposing questionnaires based on six question boxes.

TABLE I. EMPATHY MAP QUESTIONS

What did he think? (Think?) Explain what the respondent thinks	<ul style="list-style-type: none"> <li>What do you know about electronic marketplace like Bukalapak, tokopedia, shopee, lazada, etc.?</li> <li>Have you been shopping or selling at the electronic marketplace? Why do you choose to shop or sell in the electronic marketplace?</li> <li>If there is a special electronic marketplace to meet the buying and selling activities within your city, do you want it? Please write down your reason!</li> <li>Based on question number 3 if yes, what features do you want to make it easier for you to meet your daily needs?</li> <li>If the electronic marketplace for this urban area is realized what are the negative impacts that can be generated?</li> </ul>
What did he see? (See?) Explain what customers see in their environment	<ul style="list-style-type: none"> <li>In your opinion, what is the process of buying and selling in your city?</li> <li>Based on your observation whether the environment of your city internet balun has been utilized for the sale and purchase transactions among people in your city?</li> <li>If true, do these transactions use electronic marketplace platforms or in social media forums?</li> <li>Based on question number 3, please explain the advantages and disadvantages of selling in one of these media!</li> </ul>
What did he hear? (Hear?) Describe how the environment affects customers	<ul style="list-style-type: none"> <li>Have you ever heard of electronic marketplaces like Bukalapak, tokopedia, shopee, lazada, etc.?</li> <li>Which media do you know about this? What did you hear about the electronic marketplace?</li> </ul>
What does it say and do? (Say and Do?) Imagine what customers might say, or how they behave	<ul style="list-style-type: none"> <li>What kind of electronic marketplace do you want to facilitate your daily activities?</li> <li>If in an electronic marketplace using payment features with electronic money such as Go-pay, t-Cash, and others whether to facilitate the electronic marketplace services? please explain your opinion!</li> </ul>
What hurts do customers feel? (Pain?)	<ul style="list-style-type: none"> <li>Have you ever had a bad experience using facilities on an electronic marketplace? Mention and explain why it can happen?</li> <li>In your experience is there a risk in using electronic marketplaces for local / urban scale? Please state and explain why this is a risk for you as a user?</li> </ul>
What are the customer acquisition? (Gain?)	<ul style="list-style-type: none"> <li>What do you really want to get from an electronic marketplace platform that can facilitate your daily activities?</li> <li>What is your hope for an electronic marketplace platform in your area?</li> </ul>

## 2) Triangulasi

Triangulation is a data collection technique that combines the various data collection techniques and data sources that already exist [15]. The use of triangulation techniques will further increase the strength of the data that will be obtained because the data obtained is not only from one technique or one source of data collection. Triangulation of data sources is triangulation that gets data from different sources with the same technique. In triangulation data collection is done by qualitative interviews, where researchers can do face to face interviews with participants, interview them by telephone, or be directly involved [15]. The interview process is carried out to obtain data from the resource person. Interview technique used in this research is a structured interview technique, meaning that the interview process done in a planned manner. The figure below describes the triangulation of data collection sources by obtaining data through interviews from different sources with the same technique [15].

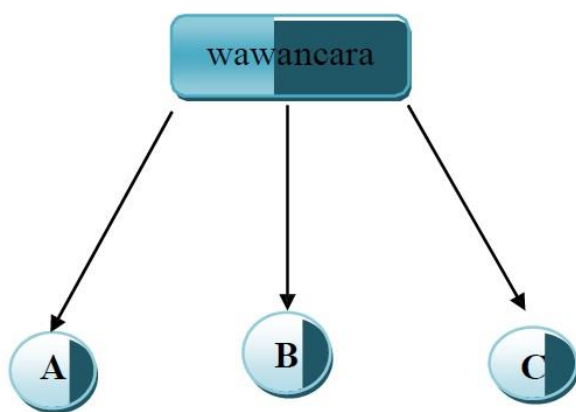


Fig.1 Triangulation of Data Collection Resources

Data obtained from the results of interviews that aim to check the validity of the data will then be coding, selecting data relevant to the subject matter. The data that has been grouped by the researcher is then understood in its entirety and found the points that the researcher uses as an indicator that will be matched with the indicators in each empathy question.

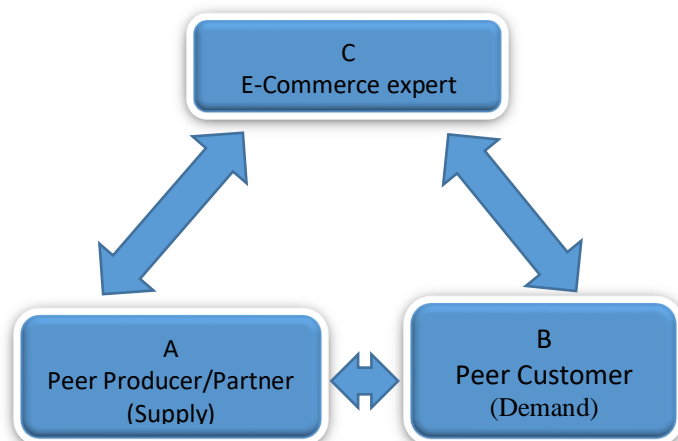


Fig. 2 Triangulation of Urban-Rural Data Sources

The source of Supply and Demand triangulation data is obtained by visiting the place of business or service in several places in Sungai Penuh. Prospective data (demand) is obtained by meeting them when they are looking for goods in a conventional store or after they visit the service provider. Data sources of e-commerce experts, researchers take from those who researchers consider to be well understood about the world of e-commerce, namely graduates of Information Systems Masters and directly involved in the business developer world since 2010, in this case the researcher appoints an entrepreneur in the IT field who has the title and people who are in the shade of the business community of the Young Entrepreneurs Association of Indonesia.

## III. RESULTS AND DISCUSSION

### A. Analysis of Ongoing Business Models

System analysis can be defined as a process of decomposition of a complete information system into component parts of the system with a view to identifying and evaluating the problems, opportunities, constraints and expected needs so that it can be proposed improvements that will be made to the system. Running system analysis is an illustration of the observed system that is currently running, so that the advantages and disadvantages of the current system can be known. Running system analysis can also facilitate the mapping of new business models. Analysis of the current system in Sungai Penuh City is mapped into Empathy Maps and context diagrams with multisided platform perspectives. System analysis and business models used in an area are very important because of the function of the analysis itself to find out how the system works so that the system created can help in mapping the new business model.

### 1) Application of Urban-Rural Regional Information Technology

In the social media community exploits Sungai Penuh City has an inisitif in the use of features in facebook social media group as a space in sharing information one of the OLX Forum Jual Beli Sungai Sungai Penuh, Jambi which consists of up to 19,319 accounts with the number of product uploads to 51,608 active uploads or about 180 uploads every month (2018).

### 2) Empathy Map Analysis

The research process begins with conducting interviews with predetermined respondents. The answer from the interview results is the response given by the prospective consumers to the results of the answers will be mapped into the indicators contained in the empathy map. The data that has been mapped into the empathy map is the basis for the statements on the questionnaire. The dissemination of the questionnaire aims to see whether there is a match between business designs made with consumer needs.

After getting the summary outline, a summary will be mapped into each element on the mixed empathy map as shown in Figure 3. The fixed data present in each mixed empathy map element becomes the basis of the questionnaire using predetermined operational variables. The distribution of questionnaires was carried out to find out whether there was a suitability regarding the business model that would be designed with the needs of the consumers.

Business Model - The Empathy Map

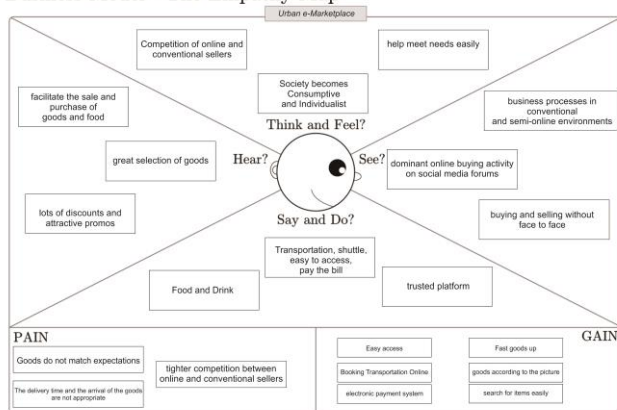


Fig. 3 Mapping interview results into mixed Empathy Maps.

### 3) Analysis of Business Models

Broadly speaking, economic and business activities in Sungai Penuh are still conventional. The use of the internet, especially on social media is only as a medium to share information about goods and services. Researchers divide into several business models when consumers conduct business activities in their environment by utilizing social media forums.

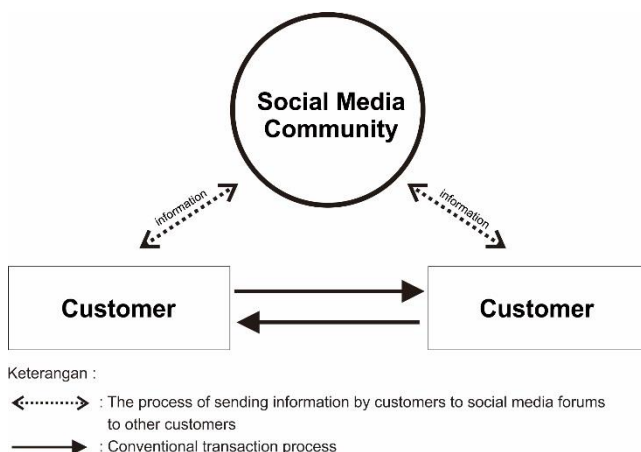


Fig. 4 Business model between consumers and consumers by utilizing social media

Figure 4 illustrates the current business process in Sungai Penuh City where consumers who want to sell their goods inform the goods to forums on social media by placing advertisements with descriptions of items that want to be sold or bartered. Forum members who are interested will bid directly on the post. If an agreement occurs, the two parties determine the place for further buying and selling transactions.

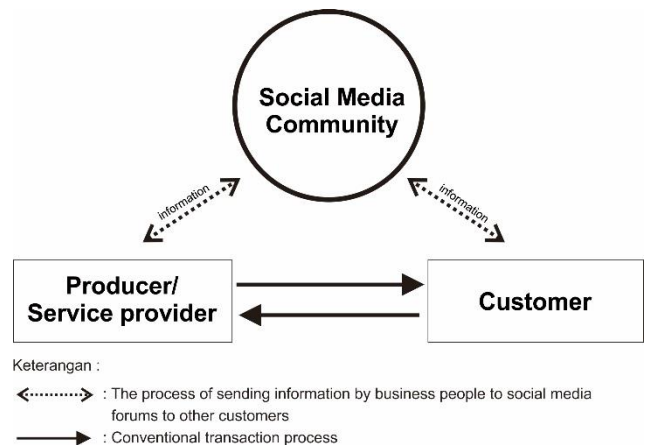


Fig. 5 Business model between traders or service providers to consumers by utilizing social media

Figure 5 describes the business process between traders or service providers to consumers by utilizing social media as a medium of advertising or promotion. The business process starts with the merchant or service provider advertising the goods or services complete with their product descriptions to social media forums. For interested forum members will submit questions about the product. Traders / service providers will direct potential customers who have an interest in the product to come to the store or contact service providers to buy or use their products.

### B. System Requirements Analysis

A system requires system elements and business processes to be applied to each element in the system environment. Researchers will conduct several analyzes to identify what the system needs in Urban e-Marketplace.

#### 1) Multisided Platform Analysis

Prior to SWOT analysis, the authors will outline the business processes that will be used in the Urban e-Marketplace platform. All entities will be connected to each other according to their business needs.

The listed entities are as follows:

1. Platform Owner (PO)
2. Stakeholder (S)
3. Partners (P)
4. Peer Producer (PP)
5. Peer Customer (PC)

The flow of business processes that will be applied to the urban e-marketplace platform includes several business processes such as B2B, B2C, C2B, C2C, to B2B2C combination business processes. All of these processes can occur because of the demand and supply between entities according to the needs of each entity with the platform as a communication link and alternative container for online peer-to-peer transactions.



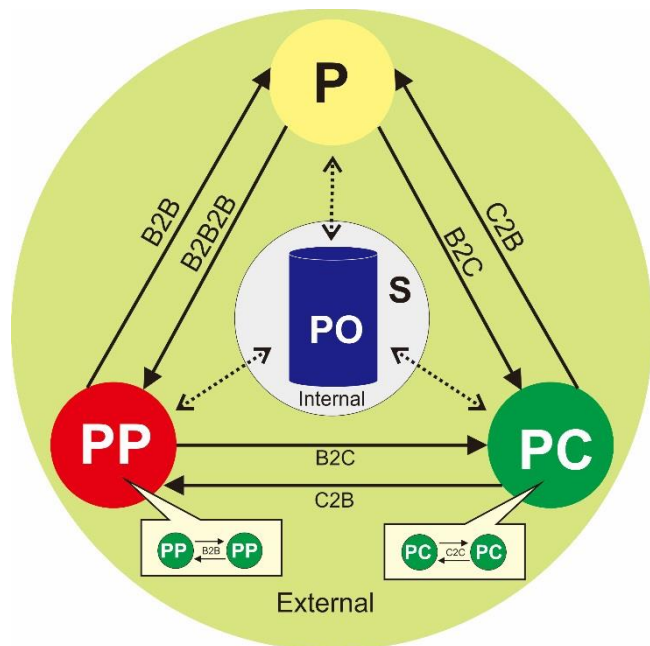


Fig. 6 Multisided Urban-rural e-Marketplace Business Model

Figure 6 there are 2 system environments, namely Internal and External. The Internal Environment includes the Entity Owner (PO) and Stakeholder (S) entities which are tasked with ensuring that the platform functions according to the business process needs of the users in the External environment. External environment there are 3 entities that have a role as Supply (Peer Producer & Partner) and Demands (Peer Customer). In the process of observation, observation and application directly with the existing e-marketplace, at the basis of each entity-entity relationships within the External environment have their own business processes / models as shown in Figure 3.3. The process that occurs in the External environment is as follows:

- PP to Partner : Business-to-Business (B2B)
- PP to PP : Business-to-Business (B2B)
- PP to Partner to PP : Business-to-Business-to-Business (B2B2B)
- PP to Partner to PC : Business-to-Business-to-Customer (B2B2C)
- PP to PC : Business-to-Customer (B2C)
- PC to Partner/PP : Customer-to-Business (C2B)
- PC to Partner to PC : Customer-to-Business-to-Customer (C2B2C)
- PC to PC : Customer-to-Customer (C2C)

Business processes / models that occur in the external environment show the complexity of business activities that must be accommodated by the Owner Platform.

### C. Proposed Business Model Using The Platform Design Toolkit v.2

Based on the results of the analysis of the business model that is running at point 4.1, the business model applied in the community of Sungai Penuh is not optimal. This is due to the incomplete features of the Facebook social media forum. For

that the existing business model should be developed further. In addition, a business model that is strategic also needs to be developed in business activities in Sungai Penuh City in the future. Therefore we propose a new business model that can process and integrate the flow of business processes thoroughly, namely in terms of business processing, service to users (both peer customers and peer producers / partners), and a guarantee system for all platform users to obtain information that is accurate, precise, and fast and guaranteed.

#### 1) Mapping the Urban Business Model e-Marketplace

There are also stages that will be implemented into the Urban e-marketplace business model is as follows:

##### a) Mapping entities in the Ecosystem Canvas

The first step in extracting Canvas Ecosystem by identifying entities within the ecosystem to produce value. In the analysis of business models in chapter III, there have been identified 5 entities that move as Supply and Demand.

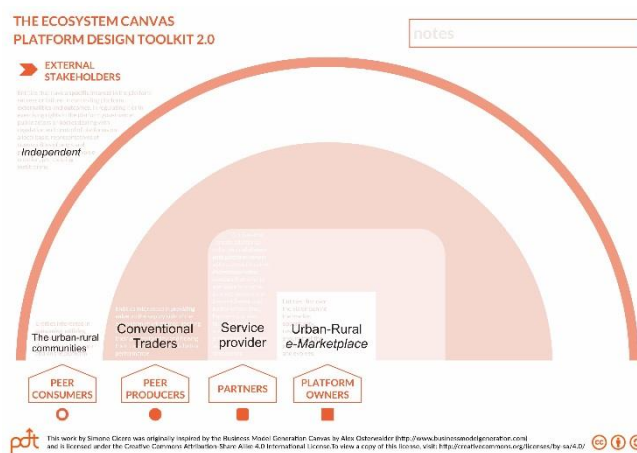


Fig. 7 Urban e-Marketplace Ecosystem Canvas

#### D. Examine the motivation and potential transactions in the Ecosystems Motivation Matrix

In this matrix it tracks potential transactions among existing entities and also to know their primary motivations to join the platform. Figure 7 is a canvas for Ecosystem's Motivation Matrix that will be filled in accordance with potential statements in the Empathy Map analysis.

a) In the first column box write one entity from the previous mapping and write also on the first line of the same entity. Next fill everything with related entities. For the first column each entity is marked (PA, PP, PC).

b) In the diagonal box write the main motivation of the correspondent entity

c) In the other box write "give to": what is given from the entity on the left axis to the entity on the upper axis. (not always "give to" this applies to any relationship).

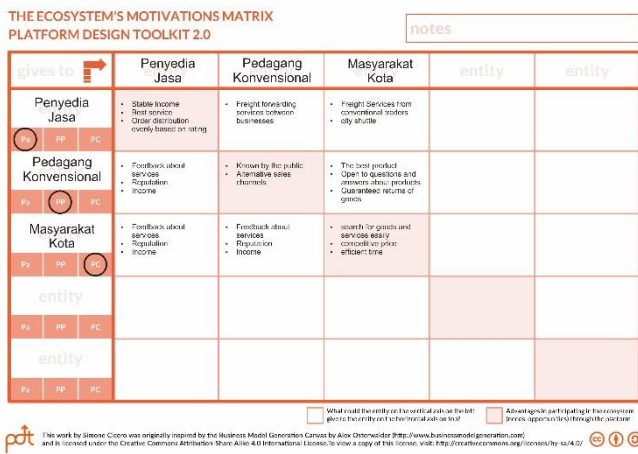


Fig. 8 Ecosystem Motivations Matrix Urban e-Marketplace

## 2) Transaction Board, Map of Key Value Units and Currencies Interchangeable by Entities

We can get transactions from work done on Matrix Motivation in identifying potential "give-to". Usually we start from the Core Entity, which is related to the Core Value Proposition.

- Focus on "give-to" by asking the following questions:
  - What transactions are mapped at the Core Value Proposition?
- For each transaction must have characteristics:
  - Unit value for each transaction
  - The second party involved
  - And channels or contexts that can be places where transactions occur (websites, social groups, etc.)
- You can use the pre-printed arrow on the transaction board to explain the direction (fill or mark the one that matches your direction). Some transactions can be two-way.
- Having mapped all transactions involving the core segments can identify some of the transactions you consider important: focus on other transactions that may involve a large number of participants as well as for those who will require formalization to happen easily (something that might not happen if no channels are available).

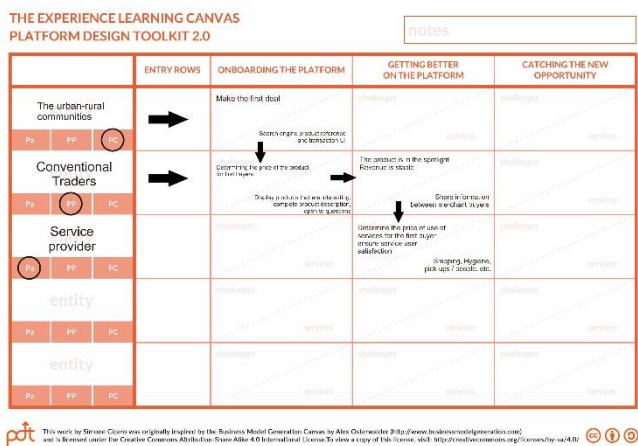


Fig. 9 Transactions Board Urban e-Marketplace

3) Use The Experience Learning Canvas to describe what services and opportunities for improvement are offered by the platform to Partners or Peers.

- For each of these steps will identify the most important challenges and related services provided by the platform to participants to solve problems.
- By using the "entry line", an arrow can be drawn in the entity's correspondence if it is possible to directly enter the platform with that role. In some cases, the role given can only be "obtained" in the later stages of evolution.
- Canvas can be used creatively and relate the role between entities if evolution through a role is possible.

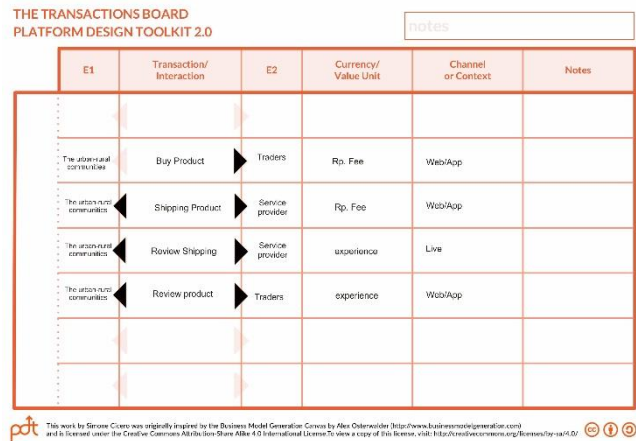


Fig. 10 The Experience Learning Canvas Urban e-Marketplace

## E. Result of Mapping

After doing all the steps in mapping Urban e-marketplace by using the Platform Design Toolkit v.2 is obtained an overview on the Platform canvas as in Figure 11.

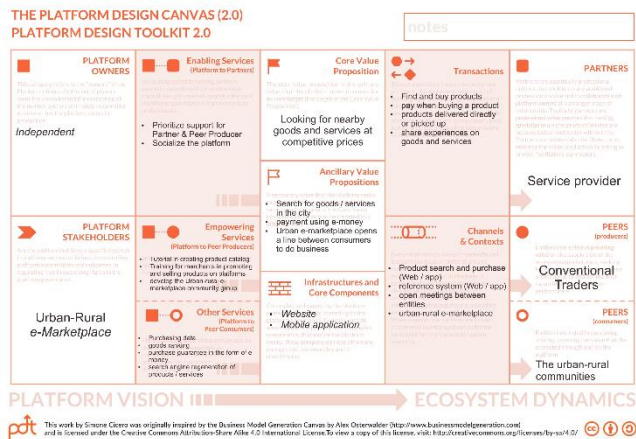


Fig. 11 Results of mapping the entire Urban e-Marketplace

From the results of Urban e-marketplace mapping, it was found that:

- Platform Owner**  
The Urban e-Marketplace team has the responsibility to support every platform user activity.
- Platform Stakeholder**  
Because the Urban e-marketplace is the design of the initial business model the availability of the Stakeholder

Platform does not yet exist. The design of a business model is an illustration or proposal in finding investors who will become the Urban Stakeholder Platform Stakeholder.

### 3) Peers

Classified 2 types including peers, namely consumer peers and peers producers.

- a) Peers Producers : *Conventional Traders*
- b) Peers Consumer : *Urban-rural community*

### 4) Partners

Service providers can provide added value in buying and selling transactions or support community activities.

### 5) Channel and Context

Development of a website or mobile application as a media platform so that each user can communicate and transaction with each other.

### 6) Transaction

Sellers can promote goods and service providers can offer their services to people who need them. Society as consumers can look for references of goods or services at competitive prices and guarantees in transactions.

### 7) Services

This perspective contains useful services for developing users in enjoying the platform. There are 3 services, namely enabling services that assist partners in generating value. Empowering services that help peers producer make transactions. As well as the last one is Other Services that are complementary when value is delivered.

### 8) Value Proposition

There are 2 types of value proposition, namely

- a) *Core Value Propositions* is Finding the closest goods and services easily, competitive prices, and guaranteed return of goods and money.
- b) *Ancillary Value Proposition* Search for goods & services in the city, payment using e-money, as well as opening a path between consumers to do business.

### 9) Infrastructure and Core Component

This platform can run according to user needs by building websites and mobile applications.

## IV. CONCLUSION

Mapping the e-marketplace business model using the Platform Design Toolkit in developing Urban-rural e-marketplace there are five platform-related entities: Platform Owner, Stakeholder, Peer Partner, Peer Producer, and Peer Consumer. Web-based platforms and mobile applications are

built to become a forum for information, transactions, and communications among entities so as to enhance the effectiveness of local economy, especially urban-rural and time efficiency and process costs. The application of electronic money becomes a guarantee to maintain customer trust in transactions.

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