Designing Two-dimensional Electronic Business-to-Consumer Models' Map by Fuzzy Delphi Panel

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Abstract

Various electronic business-to-consumer models have been presented during the past years with different classifications. Each of these models has different dimensions. This paper uses expert knowledge to identify two key dimensions of business to customer models. Each researcher has his own list of business-to-consumer models, and there are differences in the existing lists. In this paper, some appropriate models are identified through interview with experts and fuzzy Delphi method for launching a business. The positions of these models are determined in terms of identified aspects then. Based on the obtained results, ten electronic business-to-consumer models were specified and the dimensions of the type of product and the type of financial relationship with the customer were determined to provide two-dimensional map. Then using fuzzy Delphi method, the position of these models in two-dimensional map was identified.

Keywords: E-commerce, Business to consumer, E-business, Two dimensional model, Fuzzy Delphi panel, Financial model

1 Introduction

Number and percentage of goods and services sold on the Internet are rapidly increasing. Every day more customers use the Internet to find information and buy products online [12], [20]. E-commerce can be defined as *doing business electronically*. E-commerce includes electronic trading of physical and intangible goods such as information, which includes all phases of the business such as online marketing, ordering, payment and delivery support. E-commerce includes the provision of electronic services, such as after-sales support or online legal advice and will eventually include electronic support for cooperation between firms, such as collaborative design [17]. In practice, the applications of web based business models may be classified as Business-to-Consumer (B2C), Business-to-Business (B2B), Consumer-to-Business (C2B), and Consumer-to-Consumer (C2C) models [22].

The term e-business means doing business electronically which includes e-commerce, e-markets and Internet-based business and refers to companies whose business transactions with their business partners and consumers are performed through the Internet [23]. Business model is the architecture of the product, service and flow of information including a description of the different actors in business and their roles, the potential benefits for business actors and their income sources [17]. Also Chesbrough & Rosenbloom defined the business model as exploratory logic that links technical potential to realize the economic value [1].

In fact, business models tell the story about how the company works [10]. A business model considers logic, data and other documents to support a value proposition for the customer and a viable structure of income and expenses for the company that provides that value [16]. It can be said that a business model is a conceptual tool including a collection of objects, concepts and other business relationships to discuss the business logic of a particular company [11]. A business model is critical for business success. The concept of business model is known as the relationship between business strategy, process, and IT. Business model is seen as a tool for portraying and evaluating business logic, especially in the IT industry businesses [20].

Business-to-consumer E-commerce is very useful to improve company productivity. In fact business-to-consumer commerce means that the company sells the products directly to the customer [14].

Turban states that B2C E-commerce includes retail trades of services and products from business to individual buyers. In B2C E-commerce, the Value preposition is how a company's services or product meets all the needs of its customers [18]. B2C E-commerce is the best known type of electronic commerce in which online business is looking forward to achieving individual consumers [8].

Different frameworks are proposed to design business-to-consumer websites [12], but few studies have been done on how to choose the right business-to-consumer model based on the features intended by the company that plans to bring its business to the Internet. In fact, this study examines the position of business-to-consumer models according to two dimensions so that different companies could determine which business-to-consumer model is appropriate for them to enter into this field.

So this article can be useful in the preliminary design of a B2C business. It is also possible to understand the business model of a B2C E-commerce through identifying the financial process used by the business, the type of information and provided services and products.

To develop a two-dimensional business-to-consumer map, combination of the three methodologies including the literature review, interviews with experts and Fuzzy Delphi method is used. After studying literature, the results were discussed during several meetings to finalize the selected models. The fuzzy Delphi method provided by Ishikawa was used to obtain final consensus.

In the Delphi panel, experts were asked through questionnaires to determine which of the early models introduced by various researchers were appropriate to set up a B2C business. Models were selected during a semi-structured interview. In fact, using the Delphi method leaded to a relatively comprehensive consensus among experts on the appropriate model to set up a B2C business. Models were identified and their positon were determined in terms of the identified aspects.

The structure of this paper is that in the next section the literature of business-to-consumer models is evaluated. In the third section, the design of a relational model is presented. The fourth section has developed and analyzed the position of business-to-consumer models according to two dimensions by the interview and the use of fuzzy Delphi method. Section five has covered conclusion and suggestions for future research.

2 Research Background

Various papers have investigated several discussions including how to select revenue model for the business and ways to design and innovate models in E-business.

The research of Sprenger et al, provides guidelines for managers to reduce uncertainty of their decisions when designing revenue mechanisms. In fact, they have provided a theory of digital business, consisting of 17 statements to support management decisions. As a result, managers can quickly respond to the market changes [15].

Giessmann and Legner have also developed an empirical theory to design business models in the field of cloud platforms. In fact, they have associated and expanded the knowledge of software platform and business model design [4]. In addition, the research of Eurich et al can serve as starting points in the design of business model innovation for decision makers [3].

In this section the existing studies are reviewed and the definitions are provided through considering business models introduced into this study and the features and specifications set for these models.

Various researches in the field of e-commerce have provided different categories and definitions for business-to-consumer models. Each of these studies based on their approach has provided a different classification of business-to-consumer models that are sometimes even contradictory with others' views.

Turban considers E-retailing equivalent to business-to-consumer trade and has considered it as a business that is driven by sales. In fact, Turban classifies the models according to their distribution channel used in them into five categories of direct marketing by mail-order retailers that goes online, direct marketing by manufacturers, Pure-play e- tailers, Click-and-mortar retailers and Internet (online) malls. Also Turban introduces other models for business-to-consumer models including Transaction broker, Information portals, Community portal and social networks, Content creators or disseminators, Viral marketing, Market makers, Make (build) -to-order, B2B2C and Service providers [18]. In previous study of turban, electronic business models are classified into Seventeen categories including Online direct marketing, Electronic tendering systems, Name-your-own-price model, Find the best price, Affiliate marketing, Viral marketing, Group purchasing, membership, Online auctions, Product and service customization, Electronic marketplaces and exchanges, Information brokers, Bartering, Deep discounting, Value-chain integrators, Value-chain service providers, Supply chain improvers [19].

Also, Laudon classifies business-to-consumer models into eight categories including Virtual Storefront, Information Broker, Transaction Broker, Online Marketplace, Content Provider, Social network, Portal, Service provider [9]. In an article presented by Rappa business models are classified into 9 categories based on their characteristics including Brokerage, Advertising, Infomediary, Merchant, Manufacturer, Affiliate, Community, Subscription and Utility [13]. Also, Hartman & Sifonis and Eisenmann have proposed 5 and 7 business-to-consumer models that are presented in Table 1 [2], [5].

Weill and Vital have focused on the components building the business model and introduced 8 business model structures called atom and believe that the business models in the real world are more complex, but in fact they are a molecule consisting of this atoms. The 8 atoms proposed by them include: Content Provider, Direct-to-Consumer, Full Service Provider, Intermediary, Shared Infrastructure, Value Net Integrator, Virtual Community and Single Point of Contact [21].

Laudon and Traver proposed seven models as the main E-business models used in B2C including Portal, E-tailer, Content Provider, Transaction Broker, Market Creator, Service Provider, Community Provider [8].

A summary of these models introduced into various articles and studies are applied to the present study presented in Table 1.

With a more detailed look on the models categorized by several articles and researches, it is revealed that some models are repeated among studies as B2C business model. Having reviewed the literature of each model, definitions, and descriptions in different studies, we can also see that some of them cover the others. Also there are some models which are introduced as B2C model only by one paper.

Electronic Storefronts is a web-based store (Webstore); in fact it refers to the website of a company where the services and products are sold in. The purpose of many Electronic Storefronts is specific industry and finding their own database on the market. A storefront may belong to a manufacturer, a retailer, a home seller or any other business [18]-[19]. In fact, Electronic Storefront covers E-training, Virtual Storefront, E-Business Storefront, Online retailers, E-tailer, Online direct marketing, Direct-to-Consumer models which are mentioned in the table1.

Table 1: Electronic business-to-consumer models and their references

Reference	Number of models	Presented models
Turban, 2015 [18]	10	E-Tailing, Transaction brokers, Information portals, Community portal and social networks , Content creators or disseminators, Viral marketing, Market makers, Make (build)-to-order, B2B2C, Service providers
Turban, 2008 [19]	17	Online direct marketing, Electronic tendering systems, Name-your-own-price model, Find the best price, Affiliate marketing, Viral marketing, Group purchasing, membership, Online auctions, Product and service customization, Electronic marketplaces and exchanges, Information brokers, Bartering, Deep discounting, Value-chain integrators, Value-chain service providers, Supply chain improvers
Laudon, 2004 [9]	8	Virtual Storefront, Information Broker, Transaction Broker, Online Marketplace, Content Provider, Social network, Portal, Service provider
Rappa, 2003 [13]	9	Brokerage, Advertising, Infomediary, Merchant, Manufacturer, Affiliate, Community, Subscription, Utility
Hartman and Sifonis, 2000 [5]	5	E-Business Storefront, Infomediary, Trust Intermediary, E-Business Enabler, Infrastructure Providers/Communities of Commerce
Weill and Vital, 2001 [21]	8	Content Provider, Direct-to-Consumer, Full Service Provider, Intermediary, Shared Infrastructure, Value Net Integrator, Virtual Community, Single Point of Contact
Eisenmann, 2001 [2]	7	Online Portals, Online Content providers, Online retailers, Online brokers, Online market makers, Networked utility providers, Application service providers
Laudon and Traver, 2016 [8]	7	Portal, E-tailer, Content Provider, Transaction Broker, Market Creator, Service Provider, Community Provider

Intermediaries by providing value-added activities and services for buyers and sellers play an important role in trade. The most well-known intermediaries in the traditional trade are wholesalers and retailers. Two major types of online intermediaries are online brokers and infomediaries. A broker in the e-commerce is a person or a company to facilitate transfers between buyers and sellers. In the virtual space some intermediaries provide or control the flow of information, these electronic intermediaries are known as infomediaries. Information flows between the buyer and seller by infomediaries. Infomediaries are web sites that collect and organize large volumes of data and act as the intermediary between those who read the data and the ones that provide those [18]-[19]. Thus, according to the definition, information broker model, brokerage model, Infomediary, Transaction brokers, Trust Intermediary, Online retailers and online brokers, are categorized as intermediaries.

The phrase Portal is mentioned as similar titles including information portal and online portal, and market maker is repeated with phrases like market creator.

Community Providers are websites where people with common interests, hobbies or experiences come together and share their contents. The Internet creates these sites to provide easier meeting and talk to like-minded people without any geographical boundaries. Community Providers are sites that provide an online environment where people with similar tastes can trade (buy and sell goods), come together with their like-minded people and obtain shared information of interest [8]. Community portal and social networks ،Social network ،Virtual Community and Networked utility providers, all have the same definition, concept and applicability area similar to community provider. Content Provider provides information and entertainment such as newspapers, sports websites, other online resources that offer users updatable news or purchasing and travel guide. Content providers broadcast information such as digital news, music, photos, videos and artworks over the web. Paying for content is the second major source of revenue for business-to-consumer trade [8]. Content provider is mentioned with different names such as content creator or disseminator and Online Content providers in different studies.

Electronic Marketplace plays a central role in digital economy facilitating the exchange of information, services and payments. E-marketplaces create economic value for sellers, buyers, market intermediaries and society in a wider range. An e-marketplace is a virtual marketplace where buyers and sellers meet and conduct a variety of transactions. Consumers transact goods and services in exchange for money or in exchange for other goods and services [18]-[19].

Full-Service Provider provides a full range of services in one domain (e.g., financial, health care) directly or by association of suppliers to its customers. It sometimes goes beyond the proposals of the company and also hosts its partners. Because they tend to give a complete service to the customer, they might even carry their own competitors' products. The concept of full service is to provide numerous customer needs at least in one important area of their lives. Full-Service providers have a primary relationship with the customer, but they are not prohibited from interacting directly with a supplier or sales representative [21].

Auction is a mechanism that applies a competitive process for the time that a seller requests a tender between the buyers or a buyer is calling for tenders on the part of the sellers. Prices are dynamically determined by tender. Auctions are used for products and services that the traditional marketing channels do not work for them. Internet is an infrastructure to do auctions electronically at a lower cost, with a wide range of support services and a much larger number of buyers and sellers [18]-[19].

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Table 2: Business to consumer business model categorization

No	Category of models	Representative models	References
1	Electronic Storefronts	E-Tailing Virtual Storefront E-Business Storefront Online retailers E-tailer Online direct marketing Direct-to-Consumer	[2], [5], [8], [9] [18], [19], [20]
2	Intermediary	Information brokers Brokerage Infomediary Transaction brokers Trust Intermediary Online retailers Online brokers	[2], [5], [8], [9], [13], [18], [19], [21]
3	Portal	Information portals Portal Online Portals	[2], [8], [9], [18]
4	Community Provider	Community portal and social networks Social network Community Virtual Community Networked utility providers Community Provider	[2], [8], [9], [13], [18], 21]
5	Content Provider	Content creators or disseminators Content Provider Online Content providers	[2], [8], [9], [18], [21]
6	Viral marketing	Viral marketing	[18], [19]
7	Market maker	Market makers Online market makers Market Creator	[2], [8], [18],
8	customization	Make (build)-to-order Product and service customization	[18], [19]
9	Electronic marketplace	Electronic marketplaces and exchanges Online Marketplace	[9], [19]
10	B2B2C	B2B2C	[18],
11	Full service provider	Service providers Value-chain service providers Full Service Provider Application service providers	[2], [8], [9], [18], [19], [21]
12	Online auction	Electronic tendering systems Online auctions	[19]
13	Name-your-own-price	Name-your-own-price model	[19]
14	Find the best price	Find the best price	[19]
15	Affiliate marketing	Affiliate marketing Affiliate	[13], [19]
16	Group purchasing	Group purchasing	[19]
17	Subscription	Membership Subscription	[13], [19]
18	Bartering	Bartering	[19]
19	Deep discounting	Deep discounting	[19]
20	Value Net Integrator	Value-chain integrators Value Net Integrator	[19], [21]
21	Advertising	Advertising	[13]
22	Merchant	Merchant	[13]
23	Manufacturer	Manufacturer	[13]
24	Utility	Utility	[13]
25	Infrastructure Provider	Infrastructure Providers/Communities of Commerce Shared Infrastructure	[5], [21]
26	Supply chain improvers	Supply chain improvers	[19]
27	E-Business Enabler	E-Business Enabler	[5]
28	Single point of contact	Single Point of Contact	[5]

Group purchasing is a known offline method especially for companies based on the concept of quantity discounts. Its Internet model provides the possibility of obtaining great quantity advantage. Therefore people can use the Internet as a way to save money smartly. Using online group purchasing, finding a sufficient number of people to enjoy discounts on the volume of sales or transport fees' subscriptions or other costs is quick and easy [18]-[19].

Merchants are the wholesalers and retailers of goods and services. Sales may be achieved based on the price list or via auction. Merchant models include virtual merchants, electronic retailers, mail-order based business with a web based catalog and traditional retail institutions with a web counter [13].

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Single point of contact provides a unique point of contact of the company that integrates all services provided by a large multi-sector organization. Single point of contact that is so-called as Whole of Enterprise is a model that provides the possibility of entry to a full trove of offers and services. It means that a user or customer visits the website to meet a need or a question and the single point of contact leads her to the unit or business service that can solve the problema [21].

Therefore, some models cover a variety of business models, while some others are mentioned as B2C model by only one paper. Table 2 shows B2C business model categorization regarding the literature review.

3   Two-Dimensional Model Design

E-commerce literature on using E-business-to-consumer models does not argue cased on the dimensions of business. Since the purpose of this study was to determine the status of business models in two-dimensions, a new model of business-to-consumer models' classification is presented, which is a fundamental research. As discussed in the introduction, designing a 2D model can be described in 3 steps. Literature review is conducted before starting the fuzzy Delphi and the reference models that have classified and discussed business-to-consumer models are analyzed and different business models and their specifications and descriptions are reviewed and determined.

During study for research background and literature review, special attention is paid to the features and the services provided by Electronic business-to-consumer models and they different aspects were recorded. We wanted to determine two important aspects of B2C electronic business to be applied for designing 2D model. By using a semi-structured interview with experts, two important dimensions of electronic business models among the various recognized aspect were selected and we could divide each of these axes to three parts in discussion about these two dimensions. First recognized aspect was *type of product* that divided to information, service and goods. In this axe, we want to determine what kind of product provided to consumers by each business model. When a business product is information, this means that just provides information to consumers that has produced or collected by the business like a blog. And also when announce that the business provides services, this means that facilities do certain task for consumer but the consumer does not receive any physical or electronic goods, like a social network. But when a business placed in third part of this dimension, it means that consumers can access to physical or electronic goods. Although these concepts are very close and a business may be in several areas. Second identified aspect was financial model that divided to three parts include: no payment, intermediary payment and direct payment. This dimension determines that how consumer payment done. Then using an interview with experts the Electronic business-to-consumer models are selected and then using fuzzy Delphi method the position of these models is determined based on two dimensions.

According to the literature review and the similarity between the models introduced into various studies (Table 2) a questionnaire was prepared and was completed during the interview with experts. The purpose of the questionnaire was to select the B2C business models fully applicable in B2C area which are completely independent. The independent model means that it is alone sufficient to set up a B2C business. Currently in this paper we try to remove overlapping models, therefore by using a questionnaire, we asked experts to determine which models can be used alone to create a B2C electronic business and to set up a business does not need connecting and engaging with other models. The appendix A shows the questionnaire used in this phase. Having analyzed the results of the questionnaire and using Fuzzy Delphi method, B2C models are selected.

According to the models selected in the previous step, a questionnaire is prepared in the next step to determine the position of each of the models in terms of the desired aspects. In the questionnaire existing in the appendix B, the question is raised for each of the B2C models whether the company provides the customer with information, services, or a specific product. The type of the financial relationship with a customer is also determined with a few questions on whether the company receives direct payments from the customer, this reception (or company revenue in fact) is indirectly earned from the customer, or there is no payment for the customer in this method and the company's revenue is from other methods.

Table 3: Qualitative variables and their triangular fuzzy numbers [7]

Qualitative Variable	Fuzzy Value(a_{ij}, b_{ij}, c_{ij})
Highly Inappropriate	(0,0,0.1)
Inappropriate	(0,0.1,0.3)
Low Inappropriate	(0.1,0.3,0.5)
Indifferent	(0.3,0.5,0.7)
Low Appropriate	(0.5, 0.7, 0.9)
Appropriate	(0.7, 0.9, 1)
Highly Appropriate	(0.9,1,1)

The purpose of the application of the Delphi method is to access the most reliable group agreement between the experts on a certain topic using a questionnaire and the opinions of experts, on several occasions, according to the feedback from them. In Delphi method the expert's mental data are converted into almost objective data using

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statistical analysis. When this approach is applied in multidimensional, multi objective and complex decision making problems repeated time-consuming FAQ steps to reach a consensus of opinion is considered as a big problem. Generally this method has many drawbacks, including high costs and too much time to collect data. To overcome these weaknesses, Fuzzy Delphi method was developed by Kaufmann and Gupta. Applying fuzzy numbers in Fuzzy Delphi method is because it is not possible to divide the issues into black and white and each issue is analyzed in a spectrum. The use of fuzzy method is to decide on matters where the goals and parameters for decision-making are not explicitly specified which leads to excellent results. Also in Delphi method in addition that comments are necessarily conclusive, the return rate of questionnaire is reduced due to repetition, but in Fuzzy Delphi method the comments are uncertain and the return rate is not reduced due to lower repetition [6].

Table 4: Demographic of expert's panel

Demographic characteristics	Percentage
Position	
Academic member	64.28
E-Business manager	21.42
Online Marketing Manager	14.28
Education level	
B.S	14.28
M.S	35.71
PHD	50
Gender	
Female	14.28
Male	85.71

The appropriate number of experts is a point that should be considered in forming the Delphi panel. To select experts the selected people have valuable experience in e-commerce or they are researchers in this area.

After reviewing the literature and determining the Electronic business-to-consumer models as well as two important dimensions of these models using interviews with experts the position of these models sent to experts based on the dimensions detected during a semi-structured questionnaire considering linguistic words including highly appropriate, appropriate, low appropriate, indifferent, low inappropriate, inappropriate, highly inappropriate. The experts were asked in addition to remarking the position of each model in dimensions; add additional and supplemental explanations if necessary. Using variables with certain values made the experts face problems in providing their comments thus the qualitative variables are defined as triangular fuzzy numbers to cover different mentalities of the experts about the options that a_{ij}, b_{ij} and C_{ij} present the least, medium and high degrees of membership (Table 3) [7]. 14 experts agreed to participate in the study all of whom were university professors or are working in the field of electronic business that had valuable experience in this area (table 4).

In general in the algorithm of fuzzy Delphi method first the experts' choice and problem is discussed for them. Then the questionnaires will be prepared and sent to the experts and then their opinions are collected and combined based on formula (1) and the average combination of experts' opinion is calculated based on formula (2).

$$\begin{cases} a_j = \min\left\{a_{ij}\right\} \\ b_j = \dfrac{1}{n}\sum_{i=1}^{n} b_{ij} \\ c_j = \max\left\{c_{ij}\right\} \end{cases} \tag{1}$$

$$s_j = \frac{a_j + 4b_j + c_j}{6}, \, j = 1,2,3,\dots, m \tag{2}$$

After implementing the formula (1) and (2) if the value of S_j is greater than 0.8 that component is accepted [7].

4 Result of the Interviews and Implementation of Fuzzy Delphi Method

After the literature review and determination of different B2C business models, the expert's comments were gathered through the first questionnaire on whether each of the proposed models is an appropriate B2C model to setup an online business. Then, the results of this phase are applied to the next step in order to define the position of these models in both selected aspects. Using the second questionnaire specifies the financial relationship of each of the

models with the customer and the scope of these models is then determined in terms of the provision of information, services or products.

Table 5: Result of the independent B2C business model determination questionnaire

No	Electronic Business Model	S_j	Result	No	ElectronicBusiness Model	S_j	Result
1	Electronic Storefronts	0.935714	Accepted	15	Affiliate marketing	0.25	Not Accepted
2	Intermediary	0.888095	Accepted	16	Group purchasing	0.840476	Accepted
3	Portal	0.235714	Not Accepted	17	Subscription	0.178571	Not Accepted
4	Community Provider	0.878571	Accepted	18	Bartering	0.342857	Not Accepted
5	Content Provider	0.945238	Accepted	19	Deep discounting	0.183333	Not Accepted
6	Viral marketing	0.130952	Not Accepted	20	Value Net Integrator	0.292857	Not Accepted
7	Market maker	0.188095	Not Accepted	21	Advertising	0.357143	Not Accepted
8	customization	0.390476	Not Accepted	22	Merchant	0.840476	Accepted
9	Electronic marketplace	0.878571	Accepted	23	Manufacturer	0.269048	Not Accepted
10	B2B2C	0.197619	Not Accepted	24	Utility	0.164286	Not Accepted
11	Full service provider	0.830952	Accepted	25	Infrastructure Provider	0.230952	Not Accepted
12	Online auction	0.892857	Accepted	26	Supply chain improvers	0.154762	Not Accepted
13	Name-your-own-price	0.159524	Not Accepted	27	E-Business Enabler	0.411905	Not Accepted
14	Find the best price	0.164286	Not Accepted	28	Single point of contact	0.811905	Accepted

4.1 B2C business Models Analysis

The experts' comments were gathered through the questionnaire in appendix A on whether the models mentioned in table 2 (column of Category of models) are independent B2C business models. The results were analyzed using the fuzzy Delphi method. According to the fuzzy Delphi method and the formula 1 and 2, each model with S_j value higher than 0.8 is accepted and known as an independent business model, which can then be used to setup a B2C business. Table 5 shows the results.

Ten models were identified as business-to-consumer models related to enterprise to customer trade and have no overlap and similarity with each other because there are many common and similar models in the proposed models by different people.

So, Group purchasing, Online auction, Electronic marketplace, Electronic Storefronts, Intermediary, Content Provider, Community Provider, Merchant, Full service provider and Single point of contact business models were identified by experts as to be suitable B2C models for setting up an electronic business. Table 6 shows the models which are derived from the interviews and through applying fuzzy Delphi panel with the corresponding definitions.

For classifying and identifying aspects of business models for business-to-consumer models two dimensions were selected based on interviews with experts. The advantage of this is that in addition to presenting the position of the model versus these dimensions, it also presents their position relative to each other. These dimensions include type of provided service (product) and the type of financial relationship with the customer. The service dimension has an area of providing information and services to the supply of goods. Financial communication with the customer dimension includes an area of non-payment of fees and payments through intermediaries to direct payment.

4.2 Analysis of the Business Model Position in Two-Dimensional Relational Model

By a set of ten business-to-consumer models and six areas of services related to two selected dimensions, a questionnaire (Appendix B) was distributed among experts to determine the position of the models in these two dimensions. The experts were asked to determine the models in which range are located.

The experts' comments are gathered regarding the second questionnaire and analyzed using the formula 1 and 2 per each question. The results of this step are shown in table 7. Table 7 shows result of the relationship between business-to-consumer models and the parts of two dimensions of financial model and product types.

In fact, questions which gained a mark higher than 0.8 were accepted by the experts. Each question of the questionnaire specifies the type of financial relationship of each B2C model. It also determines whether the model is the provider of some information, service or product.

Table 8 shows the results of the experts' opinions. As it can be seen some of the business-to-consumer models are placed in more than one area in each dimension.

Table 6: Business models derived from interviews and fuzzy Delphi method

No	Electronic Business Model	Describtion	References
1	Group purchasing	Group discounts on volume of sales or subscription fees and other costs	Turban [18]-[19]
2	Online auction	Do auction between buyers and sellers electronically	Turban [18]-[19]
3	Electronic marketplace	A market to meet and perform a variety of transactions between buyers and sellers	Turban [18]-[19]
4	Electronic Storefronts	A company website, where products and services are offered	Turban [18]-[19]
5	Intermediary	Facilitation the transfer of information, goods and services between the buyer and seller	Turban [18]-[19]
6	Content Provider	Providing information and entertainment and broadcast it on the web	Laudon & Traver [8]
7	Community Provider	Create an online environment where people with common interests come together and share his favor information	Laudon & Traver [8]
8	Merchant	Wholesalers and retailers of goods and services	Rappa [13]
9	Full service provider	Providing multiple needs of consumers in an important areas of their lives	Weill & Vital [21]
10	Single point of contact	Providing access to a wealth of offers and services	Weill & Vital [21]

According to the results of fuzzy Delphi and interview processes a qualitative mapping of ten business models are resulted in two dimensions (Figure 1). As in Figure 1 most business-to-consumer models are related to the area of goods and services and most payments are through the intermediaries.

Single point of contact is in the lowest part of the chart, indicates that provides access to all the services of an organization for free and also Community Provider is in the same section that provides an online meeting environment for free. The content provider that is located in the leftmost part of the diagram provides information to customers and its location in this position indicates that in this model receiving the information cost is through the intermediary and sometimes directly.

Figure 1 also states that the business models Online Auction, Intermediary, Full service provider and Group purchasing that provide services and goods act as the intermediary to receiving costs. Similarly the electronic marketplace business model that sells different goods in the most common mode acts as an intermediary to receive the cost of operation. In the top of Figure 1 Merchant and Electronic Storefronts models are located indicating that they provide services or goods to the customer by receiving the fees directly.

Figure 1 segments different B2C business models regarding the two aspects of product type and financial model. In fact, this figure specifies the place of each of the models among the two aspects, which in turn, helps to understanding of the segmentation of B2C business models. In addition, Figure1 provides some tips for the selection of the business model regarding the features and goals of the financial model and product type to be provided. Contrary to that, it is also possible to determine the model a website follows with regard to the financial process type and the type of services or products.

5   Conclusion

According to literature review, researchers have been introduced different categories and models in the electronic business. Some of them have placed all business models in various fields in the same category and others have placed different models in business-to-consumer, business-to-business, consumer-to-consumer and other categories. Some models are repeatedly introduced as business-to-consumer by various researchers, but others are located in this category in one or limited number of studies or have been introduced as a standalone version.

The aim of this study was to answer the question: Which business models include all characteristics of a business-to-consumer and can be placed in this category as a standalone model and what specific dimensions can be introduced for these models and based on these dimensions what is the position of the known models? The results can be summarized as follows: 1) A set of 10 business-to-consumer models was identified; 2) two different dimensions with their own area were determined and 3) a two-dimensional map that shows the location and characteristics of the business-to-consumer models was created.

Table 7: Position of business-to-consumer models in two dimensional model

Place of electronic business models in two dimensions	S_j	Result
In Group purchasing the business provides information to the customer.	0.183333	Not Accepted
In Group purchasing the business provides services to the customer.	0.840476	Accepted
In Group purchasing the business provides products to the customer.	0.811905	Accepted
In Group purchasing the business does not receive any direct payment from the customer.	0.121429	Not Accepted
In Group purchasing the business receives the fee from the customer as an intermediary.	0.892857	Accepted
In Group purchasing the business directly receives the fee from the customer.	0.471429	Not Accepted
In Online auction the business provides information to the customer.	0.32619	Not Accepted
In Online auction the business provides services to the customer.	0.897619	Accepted
In Online auction the business provides products to the customer.	0.945238	Accepted
In Online auction the business does not receive any direct payment from the customer.	0.345238	Not Accepted
In Online auction the business receives the fee from the customer as an intermediary.	0.888095	Accepted
In Online auction the business directly receives the fee from the customer.	0.330952	Not Accepted
In Electronic marketplace the business provides information to the customer.	0.130952	Not Accepted
In Electronic marketplace the business provides services to the customer.	0.17381	Not Accepted
In Electronic marketplace the business provides products to the customer.	0.935714	Accepted
In Electronic marketplace the business does not receive any direct payment from the customer.	0.169048	Not Accepted
In Electronic marketplace the business receives the fee from the customer as an intermediary.	0.92619	Accepted
In Electronic marketplace the business directly receives the fee from the customer.	0.585714	Not Accepted
In Electronic storefronts the business provides information to the customer.	0.059524	Not Accepted
In Electronic storefronts the business provides services to the customer.	0.830952	Accepted
In Electronic storefronts the business provides products to the customer.	0.840476	Accepted
In Electronic storefronts the business does not receive any direct payment from the customer.	0.064286	Not Accepted
In Electronic storefronts the business receives the fee from the customer as an intermediary.	0.178571	Not Accepted
In Electronic storefronts the business directly receives the fee from the customer.	0.983333	Accepted
In Intermediary the business provides information to the customer.	0.730952	Not Accepted
In Intermediary the business provides services to the customer.	0.888095	Accepted
In Intermediary the business provides products to the customer.	0.888095	Accepted
In Intermediary the business does not receive any direct payment from the customer.	0.15	Not Accepted
In Intermediary the business receives the fee from the customer as an intermediary.	0.945238	Accepted
In Intermediary the business directly receives the fee from the customer.	0.159524	Not Accepted
In Content provider the business provides information to the customer.	0.983333	Accepted
In Content provider the business provides services to the customer.	0.207143	Not Accepted
In Content provider the business provides products to the customer.	0.016667	Not Accepted
In Content provider the business does not receive any direct payment from the customer.	0.116667	Not Accepted
In Content provider the business receives the fee from the customer as an intermediary.	0.802381	Accepted
In Content provider the business directly receives the fee from the customer.	0.92619	Accepted
In Community provider the business provides information to the customer.	0.366667	Not Accepted
In Community provider the business provides services to the customer.	0.945238	Accepted
In Community provider the business provides products to the customer.	0.054762	Not Accepted
In Community provider the business does not receive any direct payment from the customer.	0.945238	Accepted
In Community provider the business receives the fee from the customer as an intermediary.	0.07381	Not Accepted
In Community provider the business directly receives the fee from the customer.	0.059524	Not Accepted
In Merchant the business provides information to the customer.	0.116667	Not Accepted
In Merchant the business provides services to the customer.	0.840476	Accepted
In Merchant the business provides products to the customer.	0.92619	Accepted
In Merchant the business does not receive any direct payment from the customer.	0.145238	Not Accepted
In Merchant the business receives the fee from the customer as an intermediary.	0.116667	Not Accepted
In Merchant the business directly receives the fee from the customer.	0.935714	Accepted
In Full service provider the business provides information to the customer.	0.457143	Not Accepted
In Full service provider the business provides services to the customer.	0.811905	Accepted
In Full service provider the business provides products to the customer.	0.821429	Accepted
In Full service provider the business does not receive any direct payment from the customer.	0.461905	Not Accepted
In Full service provider the business receives the fee from the customer as an intermediary.	0.940476	Accepted
In Full service provider the business directly receives the fee from the customer.	0.069048	Not Accepted
In Single point of contact the business provides information to the customer.	0.416667	Not Accepted
In Single point of contact the business provides services to the customer.	0.802381	Accepted
In Single point of contact the business provides products to the customer.	0.402381	Not Accepted
In Single point of contact the business does not receive any direct payment from the customer.	0.811905	Accepted
In Single point of contact the business receives the fee from the customer as an intermediary.	0.069048	Not Accepted
In Single point of contact the business directly receives the fee from the customer.	0.154762	Not Accepted

Future research might be focused on consumer-to-consumer, consumer-to-business or other categories of the e-businesses or consider other dimensions to find the position of business models. It is also possible to analyze three

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dimensions of various models rather than two dimensions and determine models position in the three-dimensional space formed by the dimensions to lead to a better understanding of the characteristics of each of these models and their applications.

Table 8: Matrix of business-to-consumer models and two dimensions of financial model and product types

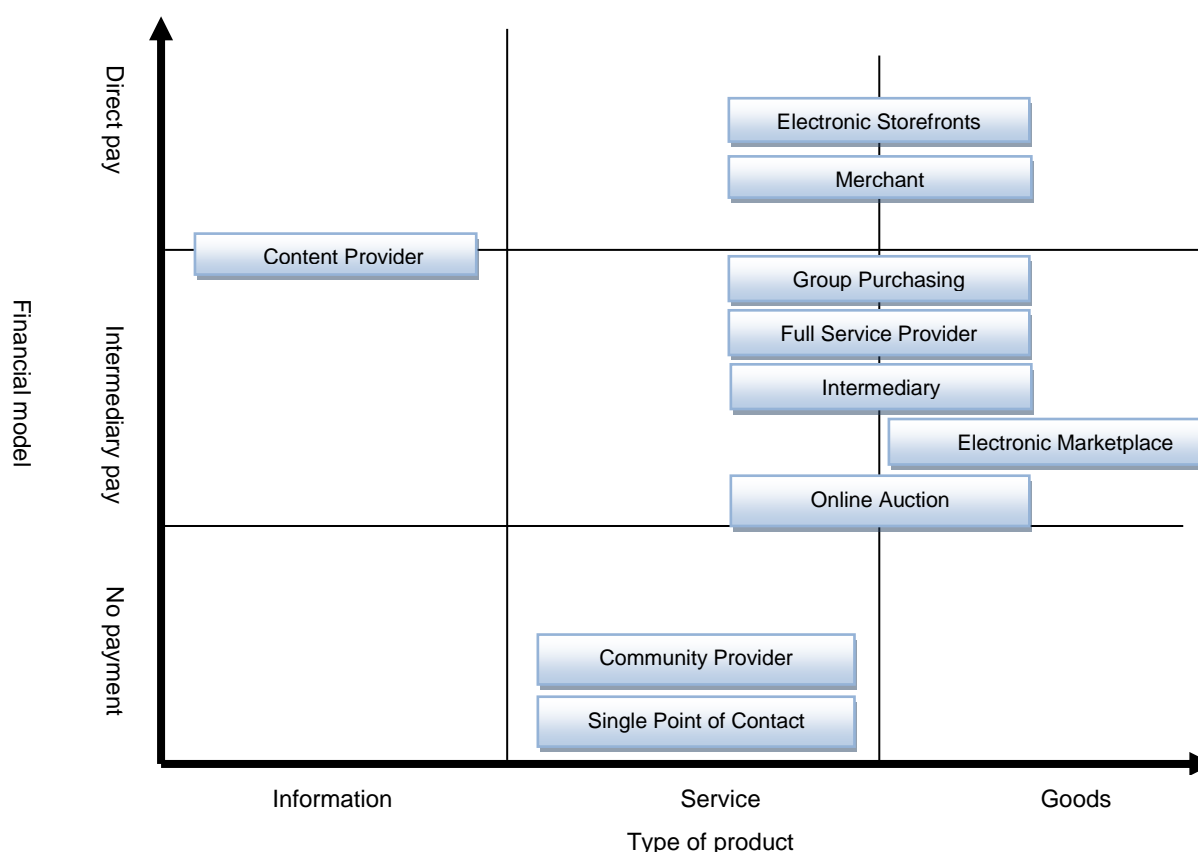| Parts of two dimensions / Models	Information	Service	Goods	No payment	Intermediary pay	Direct pay
Group purchasing	Not Accepted	√ Accepted	√ Accepted	Not Accepted	√ Accepted	Not Accepted
Online auction	Not Accepted	√ Accepted	√ Accepted	Not Accepted	√ Accepted	Not Accepted
Electronic marketplace	Not Accepted	Not Accepted	√ Accepted	Not Accepted	√ Accepted	Not Accepted
Electronic Storefronts	Not Accepted	√ Accepted	√ Accepted	Not Accepted	Not Accepted	√ Accepted
Intermediary	Not Accepted	√ Accepted	√ Accepted	Not Accepted	√ Accepted	Not Accepted
Content Provider	√ Accepted	Not Accepted	Not Accepted	Not Accepted	√ Accepted	√ Accepted
Community Provider	Not Accepted	√ Accepted	Not Accepted	√ Accepted	Not Accepted	Not Accepted
Merchant	Not Accepted	√ Accepted	√ Accepted	Not Accepted	Not Accepted	√ Accepted
Full service provider	Not Accepted	√ Accepted	√ Accepted	Not Accepted	√ Accepted	Not Accepted
Single point of contact	Not Accepted	√ Accepted	Not Accepted	√ Accepted	Not Accepted	Not Accepted

Figure1: Classification of e-commerce business to consumer models

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Appendix A: Independent B2C Business Model Determination Questionnaire

- Electronic Storefronts is an independent B2C and is appropriate to setup an electronic business.

- Intermediary is an independent B2C and is appropriate to setup an electronic business.

- Portal is an independent B2C and is appropriate to setup an electronic business.

- Community Provider is an independent B2C and is appropriate to setup an electronic business.

- Content Provider is an independent B2C and is appropriate to setup an electronic business.

- Viral marketing is an independent B2C and is appropriate to setup an electronic business.

- Customization is an independent B2C and is appropriate to setup an electronic business.

- Electronic marketplace is an independent B2C and is appropriate to setup an electronic business.

- B2B2C is an independent B2C and is appropriate to setup an electronic business.

- Full service provider is an independent B2C and is appropriate to setup an electronic business.

- Online auction is an independent B2C and is appropriate to setup an electronic business.

- Name-your-own-price is an independent B2C and is appropriate to setup an electronic business.

- Find the best price is an independent B2C and is appropriate to setup an electronic business.

- Affiliate marketing is an independent B2C and is appropriate to setup an electronic business.

- Group purchasing is an independent B2C and is appropriate to setup an electronic business.

- Subscription is an independent B2C and is appropriate to setup an electronic business.

- Bartering is an independent B2C and is appropriate to setup an electronic business.

- Deep discounting is an independent B2C and is appropriate to setup an electronic business.

- Value Net Integrator is an independent B2C and is appropriate to setup an electronic business.

- Advertising is an independent B2C and is appropriate to setup an electronic business.

- Merchant is an independent B2C and is appropriate to setup an electronic business.

- Manufacturer is an independent B2C and is appropriate to setup an electronic business.

- Utility is an independent B2C and is appropriate to setup an electronic business.

- Infrastructure Provider is an independent B2C and is appropriate to setup an electronic business.

- Supply chain improver is an independent B2C and is appropriate to setup an electronic business.

- E-Business Enabler is an independent B2C and is appropriate to setup an electronic business.

- Single point of contact is an independent B2C and is appropriate to setup an electronic business.

Appendix B: Relationship between B2C Models and the Parts of Two Dimensions of Payment and Product Types

Group purchasing

- In Group purchasing the business provides information to the customer.

- In Group purchasing the business provides services to the customer.

- In Group purchasing the business provides products to the customer.

- In Group purchasing the business does not receive any direct payment from the customer.

- In Group purchasing the business receives the fee from the customer as an intermediary.

- In Group purchasing the business directly receives the fee from the customer.

Online auction

- In Online auction the business provides information to the customer.

- In Online auction the business provides services to the customer.

- In Online auction the business provides products to the customer.

- In Online auction the business does not receive any direct payment from the customer.

- In Online auction the business receives the fee from the customer as an intermediary.

- In Online auction the business directly receives the fee from the customer.

Electronic marketplace

- In Electronic marketplace the business provides information to the customer.

- In Electronic marketplace the business provides services to the customer.

- In Electronic marketplace the business provides products to the customer.

- In Electronic marketplace the business does not receive any direct payment from the customer.

- In Electronic marketplace the business receives the fee from the customer as an intermediary.

- In Electronic marketplace the business directly receives the fee from the customer.

Electronic storefronts

- In Electronic storefronts the business provides information to the customer.

- In Electronic storefronts the business provides services to the customer.

- In Electronic storefronts the business provides products to the customer.

- In Electronic storefronts the business does not receive any direct payment from the customer.

- In Electronic storefronts the business receives the fee from the customer as an intermediary.

- In Electronic storefronts the business directly receives the fee from the customer.

Intermediary

- In Intermediary the business provides information to the customer.

- In Intermediary the business provides services to the customer.

- In Intermediary the business provides products to the customer.

- In Intermediary the business does not receive any direct payment from the customer.

- In Intermediary the business receives the fee from the customer as an intermediary.

- In Intermediary the business directly receives the fee from the customer.

Content provider

- In Content provider the business provides information to the customer.

- In Content provider the business provides services to the customer.

- In Content provider the business provides products to the customer.

- In Content provider the business does not receive any direct payment from the customer.

- In Content provider the business receives the fee from the customer as an intermediary.

- In Content provider the business directly receives the fee from the customer.

Community provider

- In Community provider the business provides information to the customer.

- In Community provider the business provides services to the customer.

- In Community provider the business provides products to the customer.

- In Community provider the business does not receive any direct payment from the customer.

- In Community provider the business receives the fee from the customer as an intermediary.

- In Community provider the business directly receives the fee from the customer.

Merchant

- In Merchant the business provides information to the customer.

- In Merchant the business provides services to the customer.

- In Merchant the business provides products to the customer.

- In Merchant the business does not receive any direct payment from the customer.

- In Merchant the business receives the fee from the customer as an intermediary.

- In Merchant the business directly receives the fee from the customer.

Full service provider

- In Full service provider the business provides information to the customer.

- In Full service provider the business provides services to the customer.

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- In Full service provider the business provides products to the customer.

- In Full service provider the business does not receive any direct payment from the customer.

- In Full service provider the business receives the fee from the customer as an intermediary.

- In Full service provider the business directly receives the fee from the customer.

Single point of contact

- In Single point of contact the business provides information to the customer.

- In Single point of contact the business provides services to the customer.

- In Single point of contact the business provides products to the customer.

- In Single point of contact the business does not receive any direct payment from the customer.

- In Single point of contact the business receives the fee from the customer as an intermediary.

- In Single point of contact the business directly receives the fee from the customer.

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