

# A Survey of Business Models in eCommerce

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**Abstract.** The last decade of technology developments have permanently changed the way how businesses are operated. Companies are forced to become visible online and stay connected. They recognise adapting to the global dynamic business landscape and responding to customers' demands as key drivers to success. Since technologies have been identified in many studies as one of the most important enabling components for successful innovative business models, it is vital to understand their roles in constructing such models. In particular, we are interested in investigating how business models of eCommerce are enabled by technology innovations. We conduct the survey based on secondary research results. To structure our findings, we developed an evaluation matrix to summarise technologies involved and their contributions to businesses. We also identified gaps in the current research and proposed an extended version of business model classification framework for eCommerce.

**Keywords:** business model, e-Commerce, technology innovation, business model classification.

## 1 Introduction

To understand the relationships between business models and technologies, it is useful to examine how business models may play a role in capturing value (profit creation) for businesses from technology deployment. A business model may be understood as a consistent framework that leverages technologies in their value propositions (product and services offerings), equipping and positioning in the value chain and network, thereby creating profits for the businesses in the long run [4]. Companies seek to adapt the right business models to exploit the full value of technologies by commercializing it [1, 4, 16, 18]. Chesbrough and Rosenbloom pointed out that if an existing business model of a company is not adapted to technologies the company wants to invest in, the company will not be managed effectively. In other words, when a business model is not aligned with new technologies, an organisation will not benefit fully from such innovations.

In the era of rapid technological change and globalisation, it is crucial for organisations to understand the concept of business models and how it contributes to value capture from technological investments [2, 6]. Companies need to identify which business models will suit best the proposed technology. Chesbrough stated that applying the same innovative technology to two different business models will yield two different outcomes [3]. Employing inappropriate business model means that technol-

ogy will not deliver its estimated expected value. “It is probably true that a mediocre technology pursued within a great business model may be more valuable than a great technology exploited via a mediocre business model” [3].

Built upon this understanding, our next task is to identify existing business models currently enabled by technologies, in particular, in the business area of eCommerce. Osterwalder [14] provided an earlier example of extensive discussion in this topic, where he used Timmers’ eleven electronic business models as a basis to explain the different eCommerce business models [21]. He further provided a survey in business models and a classification framework which enables companies to explicitly describe their business models.

Challenges for capturing all different types of business models in a classification framework have been significantly increased, since the wide spread of Internet eCommerce. The current speed of technology development and deployment has resulted in globalisation, market domination and rapid emerging of even more new business models. eCommerce and eBusiness operations are also becoming more complex and inter-linked, that there may be more than one way to classify and describe these business models. Based on Timmers and Osterwalder confirmed eleven different models, our literature survey has produced a forty-six models classification and this list is not exhausted. In this paper, we report our initial findings in our endeavours, which will create an initial overview of modern business models in the field of eCommerce and eBusiness, with a special focus on those deployed (innovative) technologies.

In order to provide a consistent and comparative analysis of surveyed literature, we have devised an analysis and evaluation framework to generate a summarised report for each selected literature. In this framework, we were particularly interested in the use of new technologies and their contributions to the eCommerce business models. Example papers that reported on deploying innovative technologies in business models are, e.g. Value Alliance Model for supporting cooperation between enterprises, Automation Model for improving order allocation for eCommerce retailers, or negotiation Agent Model using both rule-based and case-based reasoning for eTourism industry. In total, we have included thirty-three papers in our survey. Although the term eCommerce is often used to refer to the business transactions conducted via the Web and eBusiness is referring to the back-end business operations, strategies, organisational goals and processes, etc. In this paper, we do not make such a fine distinction, but will refer to them both in the sense of businesses on the Web.

## **2 Background**

Adapting a right business model is undoubtedly crucial for organisations nowadays. However, there is no one standard model that suits all. For the same business models could be successful for one company, but they will not provide the same results for another. As a result, business models have been a subject of research for both practitioners and academics during the last decade, which had yielded different classifications and also different definitions of what exactly a business model is.

The definition provided by Osterwalder describes a business model as “a conceptual tool that contains a set of elements and their relationships and allows expressing a company's logic of earning money” [14]. The logic of earning money may be understood as how a company creates and provides value to its customers and business partners in order to generate profit [2]. However, recent technology developments have permanently changed the way how businesses are operated. Internet based operations not only overcome space and time boundaries. It has created totally new forms of companies - from ‘brick and mortar’ to solely virtual forms. When the Internet was opened in 1991 for commercial use, many organisations started trade online, this had a huge impact on business operation processes, particularly on the way how today’s data are collected, stored and used. One prominent evidence on how technologies change business environment and operations is cloud computing, which has become a popular technology as reported by More and Mukhopadhyay [13]. Internet enables companies to exchange information freely and instantly, the volume of data sent electronically grows rapidly not on a yearly basis, but on a daily basis. Based on the Minnesota Internet Traffic Studies, since 1990 the internet traffic of 1TeraByte/month in the US had grown to 3750K TB/month in 2011. The growth rate is exponential at 3750K folds in 21 years (MINTS) [12]. Global Internet showed a similar trend, CISCO reported a 0.002 Petabyte/month for IP and Internet traffic in 1990 to 48,117 Petabyte/month in 2011, a growth rate of 24 million folds (CISCO) [5].

Big organisations are increasingly facing problems with storing, analysing and protecting huge volumes of information. Modern companies seek to optimize information resources by making the most of new technologies. This resulted in cloud computing to be deployed very quickly by businesses and is now widely adopted across different sectors [15]. This raises questions and stimulates research studies in which business models should be adapted by companies in the era of Internet commerce - are existing business models still good enough for new forms of ‘brick and click’ businesses [2]?

Rapid changing business environments have also applied great pressure to organisations to come up with new business models and new strategies. Many of innovative business models have been incorporated and adopted across industries and sectors such as telecommunications, banking and content providers such as newspaper agents [8]. Choosing a right business model means greater business flexibility, efficiency and responding to the demand of customers, but what’s more important, it means staying competitive in the era of globalisation. For this reason, it is essential to develop eBusiness models as abstractions of how today’s businesses function, i.e.” eBusiness models must clearly describe what information should be shared and when and how to share information” [2]. However, traditionally a business model often assumes that certain customers will pay for products or services offered by a company: “a business model is a conceptual, rather than financial, model of business” [20]. As described by Teece, a business model illustrates the reasoning for organisational and financial structure. However, most of all, correctly adopted business models for new technologies focuses on value propositions.

Based on our research, we observed that technologies enable a range of new eBusiness models. On the other hand, technology in itself provides no guidelines for

selecting a suitable model in commercial terms; such guidance to technology development can come from the definition of new models [21]. As a result, we attempt to make a contribution to the computer science community by investigating eBusiness models, thereby giving inspiration for creating innovative technology suitable for commercial development.

### **3 Our Approach**

This research includes secondary electronic resources that are based on academic publications and company reports, as appropriate. An analysis framework was developed to consistently organise and compare the selected literature. Initially, we selected papers from prominent scholarly resources, inc. IEEE, ACM, CiteSeerX, and business management journals. We focused paper discussion in the fields of “business model”, “business model innovation” and “digital business model”. Subsequently, we selected papers that have the following properties, inc. papers reporting disruptive technologies, innovative business models creation and practices, use of innovative technologies, potential technologies to enable new business models and/or important operational changes, recent or well-cited papers, etc. Based on these selection criteria, we have narrowed down our selection to thirty-three papers. For each of the selected paper, an evaluation and analysis matrix is then applied. This matrix includes the following criteria: paper ID, citation reference, types of the paper, main concepts, business sector, business areas, used/proposed technologies, used/proposed mechanisms, weakness and strength (of the paper and proposed innovation), applicability, case study, evaluation results, whether new technologies and/or mechanism have been proposed and deployed in the real world, whether new business models have been proposed and deployed, If so, has the proposed business model/technologies/mechanism being successfully deployed, amount of citation to date.

This framework asks one to identify what is the proposed innovation, where new innovation may be (or have been) usefully applied, its strength and weakness, and its relation to business models, so that readers may easier use this work as a guide for their own purposes. The papers were also analysed for case studies - whether the proposition has been based on a company or companies’ data. Finally, the framework requires the evaluation of the proposed technology, inc. what were the results, and how it has been tested, whether it has been incorporated in commercial applications. Furthermore, if the proposed innovation has been compared with some other similar work in the field, then what were the results? The framework also attempts to assess how successful the proposition is, in a ranking from 1 to 5, where five is the highest mark, which means successful in linking technology with value creation. The last criterion indicates possible impacts that a paper has/may have by giving the number of citations. We focused more on recent papers published during the last four to ten years. Examples of business areas for investigation were: investment into adoption of e-business across different sectors, (innovative) value creations, business processes changes and strategies.

## 4 Business models and classification

Our first principle is to identify and include representative types of business models on the web - although this is an enormous task and is not possible to be complete when new business models are created continuously. The second principle is to identify business models that leverage technologies, especially where technologies have played a significant role to create and deliver values for businesses. Business' presence on a web page was not simply identified as business model. We looked into the business operations behind the scene, inc. the nature of a business, the position of a business when comparing with their peers, their positions in a value chain, market divisions, their business processes, relevant business partners, target markets, revenue streams, business strategies, trading methods, products and services types offered, etc.

In Osterwalder's thesis, "The business model ontology - a proposition in a design approach", he proposed a relatively comprehensive business model classification framework which enables companies to explicitly describe their business models [14]. This earlier work had attracted a great deal of attention from scholars. It had been cited 1162 times since published eleven years ago. As a result, Osterwalder's above publication was selected for more detailed analysis. We found his review of business models taxonomies of eleven categories by Timmers' along with his own discussion and framework very promising. Nevertheless, this classification has presented a significant gap today. Indeed, advancements in technologies, such as search engine, Web2.0 and the Semantic Web has re-shaped and changed eCommerce and eBusiness significantly. As a result, there are many new emerged business models which have not been captured in existing classifications. Taking into account the focus of this study, we have decided to base on Timmers' classification and Osterwalder's discussion on it as a foundation for expansion; in particular, as this classification is closely related to technology engagements, i.e. some models would only exist, because of innovation technologies.

In Timmers' study 'Business Models for Electronic Markets', he identified eleven different business models, which existed on the Internet. In order to create this classification, Timmers developed a framework which led to the qualitative mapping of these eleven Internet models. His systematic approach was based on two activities: de-construction and re-construction of a company's value chain, which resulted in investigating models along two dimensions: degree of innovation and degree of functional integration.

Following Timmer's classification approach, we have adopted a similar approach to compare with other approaches, e.g. work of Rappa [17] and Tapscott, et. al. [19], to create an extended classification. Based on web based company presence, we have created a new extended classification that consists of forty-six business model types. For each type of the business model in the classification, we provide an attempted description as well as example businesses that can be found on the web for this type. This list of classification is by no means exhaustive and further work is needed.

For each business model, we also attempt to allocate a Degree of Innovation on a scale of five. The lowest degree of one indicates that a business model merely mimics or supports the original business model exists outside of the web, e.g its primary pur-

pose is to provide a web based presence. In such cases, the main function of its web counterpart is to communicate and promote a company brand. The highest degree of five indicates a highly innovative eBusiness model that does not previously exist before its web form – and may not exist outside of web. Other lesser degrees of the innovation indicate when an original business model does exist outside of the web form, but the web version of the business is significantly different from the original business model. As similar types of business models may be grouped together, we have also provided initial grouping that does not previously exist in Timmers' work. Below gives a brief description of our business model classification:

### **Categories of Business Models on the Web:**

- 1) E-shop: business promotes own brand by selling its goods/services online: [www.sony.co.uk](http://www.sony.co.uk); [www.ukecigstore.com](http://www.ukecigstore.com)
- 2) E-supermarket: business primarily sells groceries from others, but may also sell own brands: [waiyeehong.com](http://waiyeehong.com); [asda.com](http://asda.com); [tesco.com](http://tesco.com); [ocado.com](http://ocado.com)
- 3) E-mall: a collection of e-shops, different brands sell products under one name (the mall): [emall.me](http://emall.me); [emall.karangkraf.com](http://emall.karangkraf.com); [Amazon.com](http://Amazon.com); [johnlewis.com](http://johnlewis.com); [houseoffraser.co.uk](http://houseoffraser.co.uk); [groupon.com](http://groupon.com)
- 4) E-wholesaler: serves B2B market, buyer must have membership to purchase goods: [Costco.com](http://Costco.com); [mxwholesale.co.uk](http://mxwholesale.co.uk); [davidssales.co.uk](http://davidssales.co.uk); [hktdc.com](http://hktdc.com)
- 5) E-hubs: brings together a large number of buyers and sellers under one virtual roof to assist information sharing and/or trading, typically serves B2B markets: [e-steel.com.sg](http://e-steel.com.sg); [PlasticsNet.com](http://PlasticsNet.com); [TradeOut.com](http://TradeOut.com); [W3C.com](http://W3C.com); [o.info](http://o.info)
- 6) 3rd party marketing & sales channel: a company provides online marketplaces for other businesses: [eBay.com](http://eBay.com); [amazon.com](http://amazon.com); [gumtree.com](http://gumtree.com)
- 7) E-auction: virtual auctions facilitating buyers and sellers regardless of their locations: [eBay.com](http://eBay.com); [webstore.com](http://webstore.com); [onlineauction.com](http://onlineauction.com);
- 8) E-compare: compares services across different vendors, revenue is often generated via web marketing, vendor subscription fees and referral fees: [Uswitch.com](http://Uswitch.com); [GoCompare.com](http://GoCompare.com); [MoneySupermarket.com](http://MoneySupermarket.com); [CompareTheMarket.com](http://CompareTheMarket.com)
- 9) E-Supply Chain Management: integrates e-Procurement, e-Billing and/or other e-Business tools to increase the efficiency of logistic, distribution and production: [gtnexus.com](http://gtnexus.com); [quyntess.com](http://quyntess.com); [ciltuk.org.uk](http://ciltuk.org.uk) (see members for more info)
- 10) E-Logistics: third party operators that manage the movement of products: [dhl.com](http://dhl.com); [logixperience.com](http://logixperience.com); [ups.com](http://ups.com)
- 11) E-procurement: connects companies or itself with suppliers while managing interactions between them: [owens-minor.com](http://owens-minor.com); Department of Defence US; [procurement.bristol.gov.uk/supplierselfservice](http://procurement.bristol.gov.uk/supplierselfservice); [dwp.bravosolution.co.uk](http://dwp.bravosolution.co.uk)
- 12) Value chain integrators: integrate multiple steps of a value chain, with the potential to exploit information flow between those steps as further added value: [ictsolutions.co.uk](http://ictsolutions.co.uk); [telkom.co.za](http://telkom.co.za); [winshuttle.com/solutions-sap/by-function-task/sap-excel](http://winshuttle.com/solutions-sap/by-function-task/sap-excel)
- 13) Value chain providers: specialize on a specific function for the value chain, e.g. electronic payment or logistics: [paypal.com](http://paypal.com); [www.dpd.co.uk](http://www.dpd.co.uk); [saildatabank.com](http://saildatabank.com);
- 14) Information brokerage: provides comprehensive up-to-date news coverage, revenue mostly comes from advertising [uk.msn.com](http://uk.msn.com); [aol.co.uk](http://aol.co.uk); [news.google.com](http://news.google.com);

- 15) e-Smart Data: catches value from high volumes of data from open networks or from integrated business operations, also called Business Intelligence: [nweh.org.uk](http://nweh.org.uk); [alexa.com](http://alexa.com); [urltrends.com](http://urltrends.com); [domaintools.com](http://domaintools.com); [aiip.org](http://aiip.org);
- 16) E-database: stores and organises information online to make it available to professional and commercial users: [saildatabank.com](http://saildatabank.com); [gmdnagency.org](http://gmdnagency.org); [yellowpages.com](http://yellowpages.com)
- 17) Trust services: certification consultants, electronic notaries and other trusted third party authorities: [adviceguide.org.uk](http://adviceguide.org.uk); [techzone.adviserzone.com](http://techzone.adviserzone.com)
- 18) Web host: provides web services to individuals or companies: [heartinternet.uk/web-hosting](http://heartinternet.uk/web-hosting); [ntchosting.com/web-hosting](http://ntchosting.com/web-hosting)
- 19) Collaboration platforms: provides a collaboration environment for enterprises: [devconnectprogram.com](http://devconnectprogram.com); [fuqua.duke.edu/offshoring](http://fuqua.duke.edu/offshoring); [collab.net](http://collab.net)
- 20) Collaboration platforms sub-group: file and document sharing: storing and sharing files across members of a group or with public: [micorsoft.com](http://micorsoft.com) (one drive); [google.com](http://google.com); [dropbox.com](http://dropbox.com); [asus.com](http://asus.com) (web storage)
- 21) E-Media: media providers, esp. audio and video based media, revenue comes from advertising, subscribing, renting, and downloading: [telegraph.co.uk](http://telegraph.co.uk); [lovesfilm.com](http://lovesfilm.com); [bbc.co.uk](http://bbc.co.uk); [tvplayer.com](http://tvplayer.com); [myeasytv.com](http://myeasytv.com)
- 22) E-Government: government information and services online: [gov.uk](http://gov.uk); [hmrc.gov.uk](http://hmrc.gov.uk); [jobsearch.direct.gov.uk](http://jobsearch.direct.gov.uk)
- 23) E-Health: healthcare practice supported by electronic processes and online communication, also covers self-monitoring healthcare devices: [ehealth.scot.nhs.uk](http://ehealth.scot.nhs.uk); [netdoctor.co.uk](http://netdoctor.co.uk); [patient.co.uk](http://patient.co.uk)
- 24) E-petition: services to allow public to access, create, forward and sign petitions via the internet: [change.org](http://change.org); [epetitions.direct.gov.uk](http://epetitions.direct.gov.uk); [thepetitionsite.com](http://thepetitionsite.com)
- 25) Virtual Office Environment: business communication and services enabled in virtual settings without a dedicated physical space: [www.regus.co.uk/products/virtual-offices/virtual-office-bundles.aspx](http://www.regus.co.uk/products/virtual-offices/virtual-office-bundles.aspx); [www.ereceptionist.co.uk/virtual-office](http://www.ereceptionist.co.uk/virtual-office)
- 26) Virtual Corporate Environment: certain groups of people working online together toward a for-profit goal, with or without having to formally incorporate or form a traditional company: [globalhmc.com](http://globalhmc.com)
- 27) Virtual World Organisation: business is operated solely in virtual form: [smile.co.uk](http://smile.co.uk)
- 28) E-conferencing: technologies to support professional multi-users communication and 'conferencing' regardless geographical locations: [ted.com](http://ted.com); [adobe.com](http://adobe.com) (adobe connect); [bt.com](http://bt.com) (BT conferencing)
- 29) E-telecoms, video conferencing and instant messaging: telecommunication typically provided at a smaller scale, aiming at SME/individual users: [skype.com](http://skype.com); FaceTime from Apple; [adobe.com](http://adobe.com) (adobe connect)

### **Virtual Communities (VC)**

- 30) VC sub-group: topic-specific community: brings together virtual communities that contribute value in an environment that is hosted and managed by a virtual community operator. Revenue comes from: membership fees, advertising, may also be supported by a 3rd party, it can also be found as an add-on to other marketing opera-

tions for customer feedback or loyalty building: [globalexchange.org](http://globalexchange.org); [netmums.com](http://netmums.com); [diabetes.org.uk](http://diabetes.org.uk)

31) VC sub-group: person-centric social communities: for creating individual's online profiles, sharing information and communication between users, searching and linking people with similar interests: [Facebook.com](http://Facebook.com); [Twitter.com](http://Twitter.com)

32) VC sub-group: professional (social) communities: networking sites for business professionals: [uk.linkedin.com](http://uk.linkedin.com); [efactor.com](http://efactor.com); [odesk.com](http://odesk.com); [ciltuk.org.uk](http://ciltuk.org.uk)

33) VC sub-group: community software co-creation: self-selected group of people of suitable technical capabilities work collaboratively to create software and tools for offer often under open source license: [mozilla.org](http://mozilla.org); [github.com](http://github.com)

34) VC sub-group: online repository: central place where data and/or software is stored and maintained: [sourceforge.net](http://sourceforge.net); [xp-dev.com](http://xp-dev.com); [lboro.ac.uk](http://lboro.ac.uk) (repository)

35) VC sub-group: media sharing: sharing images and videos through social network: [flickr.com](http://flickr.com); [youtube.com](http://youtube.com); [Instagram.com](http://Instagram.com)

36) VC sub-group: information sharing: knowledge and information sharing: [big.uk.com](http://big.uk.com); [semanticweb.org/wiki/GoodRelations](http://semanticweb.org/wiki/GoodRelations); [linkeddata.org](http://linkeddata.org); [cips.org](http://cips.org)

37) VC sub-group: tool sharing: tools are shared across members: [madiproject.co.uk](http://madiproject.co.uk);

### **E-tool**

38) E-tool: online off-the-shelf tools provided to end users: [prezi.com](http://prezi.com); [studyblue.com](http://studyblue.com); [padlet.com](http://padlet.com)

39) E-tool sub-group: on-line calendar: for organising schedules and meetings, to share within a company, between business partners or private individual users: [doodle.com](http://doodle.com); [google.com/calendar](http://google.com/calendar); [calendar.live.com](http://calendar.live.com)

40) E-tool sub-group: e-organiser: organising events and selling tickets online: [Eventbrite.com](http://Eventbrite.com); [eorganiser.com.au](http://eorganiser.com.au); [omnigroup.com/omnifocus](http://omnigroup.com/omnifocus)

### **Mobile Commerce (MC)**

41) Mobile money: brings the web in the form of mobile applications to the end user, T-mobile (mobile money) via Apple iTunes; [myringgo.co.uk](http://myringgo.co.uk) (park)

42) MC sub-group: Mobile App as a broker: customers order services online/via mobile devices, often the service providers do not have own business websites, so need to advertise/offer their services via a 3<sup>rd</sup> party: [uber.com](http://uber.com); [just-eat.co.uk/apps](http://just-eat.co.uk/apps);

43) MC sub-group: Mobile App for existing systems: extend enterprise software that has been already implemented (CRM applications, HR, etc.) onto mobile devices: e.g. Aeroprise as acquired by BMC Software ([bmc.com](http://bmc.com))

44) MC sub-group: Mobile App as a subscription: content available to subscribers only: [wired.com](http://wired.com); [pumpone.com](http://pumpone.com)

45) MC sub-group: Mobile App as extension of a web business: operations of an existing online business which can be accessed on internet-enabled mobile devices [switchfly.com](http://switchfly.com); [dpd.com/nl\\_en/home/about\\_dpd/mobile\\_website](http://dpd.com/nl_en/home/about_dpd/mobile_website)

46) MC sub-group: Mobile Business Intelligence: an extension of business intelligence (BI) from desktops and laptops based to mobile devices including Blackberry, iPhone, and iPad: [oracle.com/us/solutions/business-analytics/business-](http://oracle.com/us/solutions/business-analytics/business-)



[intelligence/mobile/overview/index.html](#); [sap.com/pc/analytics/business-intelligence/software/overview/mobile-bi.html](#)

For other related work, Rappa provided a more recent taxonomy of Internet business models that, at its highest level, it distinguished nine e-business model categories: Brokerage, Advertising, Infomediary, Merchant, Manufacturer (Direct), Affiliate, Community, Subscription and Utility [17]. For each category, he identified its source of revenue streams and business strategies and has backed up these categories with example businesses from the web. Rappa's proposed taxonomy is just one of the examples on how business models may be defined and categorized. There are also other classifications, e.g. Tapscott, Lowy and Ticoll [19] and Linder and Cantrell [10]. The differences between these taxonomies lie in their definitions of a business model. Since these categories are created based on different business model definitions, the created categories give different perspectives. Separately, Hayes [9] provided a comparison between the different classifications.

## 5 Conclusions

We investigated existing e-Business models based on secondary research results using a structured analytical framework. We were particularly interested in business models that employed (innovative) technologies and business practices. Based on such studies, we then assessed as to what extent technologies may have affected the process of realising business models. The aim of our research is an attempt to improve our understanding in the poorly-understood relationships between technologies and their potential influences in business models, and from a more technical focused perspective. Based on such research, we hope to inspire technical communities to create innovative technologies suitable for commercial development. In the long run, we therefore hope to motivate and bring together the business and computer science communities alike to create new disruptive technologies and innovative business models, where possible, and eventually lead to the creation of common wealth and well-being for the society.

We have identified substantial gaps in terms of understanding existing business model on the web. We have developed a new classification of forty-six categories in business models – an improvement from the eleven model types as originally identified in 1998 by Timmers. This is due to the rapid advancements in technologies and wide spread use of Internet technologies during the last two decades. We have also backed up each of our identified categories with exemplified real businesses on the web. Our work is by no means exhaustive, as new business models emerge continuously at a global scale, while at the same time becoming more complicated and inter-linked. As a result, further and continuous work is needed to provide a more comprehensive and in-depth understanding of this very important piece of puzzle that moves forward today's Digital Economy rapidly.

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