Journal of Financial Services Marketing (2022) 27:81–95
https://doi.org/10.1057/s41264-021-00105-0

ORIGINAL ARTICLE

Customer readiness to co-production of mobile banking services: a customer-only co-production perspective

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Received: 16 January 2020 / Revised: 13 May 2021 / Accepted: 23 June 2021 / Published online: 30 June 2021

Abstract

This paper aimed to identify the antecedents and corollary of customer readiness for co-production in customer-only co-production services using mobile banking services as a context. Using a structured questionnaire, data were gathered from a sample of mobile banking customers in Ghana and the UK and the data analysis was facilitated by structural equation modelling. From the findings, the antecedents were customer socialisation, customer self-efficacy and customer motivation and the corollary was service productivity. The findings provide managers of customer-only co-production or technology-based services particularly mobile banking services with the specific factors that can be managed strategically and tactically to enhance customer readiness for co-production and service productivity. This study is one of a kind to conceptualise and empirically identify the antecedents and corollary of customer readiness for co-production within the customer-only co-production context. However, as the study was limited to mobile banking services, future studies might test the research model in other customer-only technology-based services.

Keywords Customer-only co-production · Customer readiness for co-production · Co-production · Mobile banking · Technology-based services · Services productivity

Introduction

The financial services industry has traditionally been dominated by brick and mortar banking, which is over-reliant on employee–customer co-production and has been criticised for contributing to the high transactional cost, long queues, poor customer service and the service quality problems associated with traditional banking (Ondiege 2010; Sadiku et al. 2017). To overcome these challenges, several financial services stakeholders including the World Bank, regulators and customers have mounted pressure on banks to stay innovative and competitive. Subsequently, the financial services industry has taken advantage of the opportunities associated with mobile and internet technologies by adopting and investing massively in technology-based services including automatic teller machines (ATMs), internet banking and mobile banking services as an alternative mode of financial services delivery.

Mobile banking (hereafter, M-banking) refers to the use of mobile devices in the delivery of financial services with money becoming bits of data stored in mobile devices (Luo et al. 2010; Sadiku et al. 2017). M-banking offers affordable, fast and efficient banking services by offering customers the opportunity to access multiple banks, accounts and financial services anywhere and anytime (Ahluwalia and Varshney 2009; Sadiku et al. 2017). It also offers services such as account opening, balance and statement enquiries, bill payment, fund transfer, stock trading, cheque book request, payment of bills and, mobile airtime top-up. Since its inception, M-banking has gained global recognition in both developed and developing countries and transformed the way banking services are produced and consumed; reshaped how banks and customers relate; and recognised customers as value co-producers. Its relevance is evidenced in the ongoing Covid-19 pandemic with a 200% and 85% increment in mobile banking registration and traffic, respectively, according to a CNBC report (Sheng 2020).

The growing popularity of M-banking has led to scholarly attention on trust and risk perceptions of M-banking

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services (e.g. Luo et al. 2010), consumer attitudes, intension and user profile of M-banking services (e.g. Laforet and Li 2005; Chaouali et al. 2017; Frimpong et al. 2017), technological readiness, adoption and diffusion of M-banking services (e.g. Luo et al. 2010; Alalwan et al. 2016; Sharma and Al-Muharrami 2018; Shareef el al. 2018) and a cross-cultural study on the intention to use mobile banking (Merhi et al. 2019). This has also contributed to the popularisation of concepts such as "co-production", "technology-based services", "self-service" and "customer-only co-production[1]" in service marketing dialogue (e.g. Bitner et al. 1997; Vargo and Lusch 2004; Yalley and Sekhon 2014; Tam and Oliveira 2017).

Despite the aforementioned scholarly work being undertaken, M-banking practitioners have commented on the limited customer engagement in co-producing value through M-banking (Aker and Mbiti 2010; Dasgupta, 2011). Subsequently, some scholars have attributed this to customers' unwillingness to co-produce (Gerrard et al. 2006; Shaikh and Karjaluoto 2015; Yu and Chantatub 2016) and the inadequacy of scholarly understanding on the factors influencing customers to engage in customer-only co-production services (Yalley and Sekhon 2014; Sekhon et al. 2016; Tam and Oliveira 2017; Yalley 2020). In response, some scholars have championed the call for a better understanding of the factors influencing customer readiness to engage in co-production as well as its impact on service outcome by studying the antecedents and consequence of co-production (Meuter et al. 2005; Chan et al. 2010; Chathoth et al. 2013; Sekhon et al. 2016; Tam and Oliveira 2017).

Nonetheless, these studies have focussed on the dyadic (employee–customer) co-production perspective whilst the customer-only co-production perspective particularly technology-based services (e.g. M-banking services) has been neglected. Research on customer-only co-production particularly technology-based services is imperative taking into consideration the call by some scholars for empirical research on customer-only co-production (e.g. Yalley and Sekhon 2014) as well as its significance in resolving the argument for and against customer participation in the service production process (e.g. Levitt 1972; Hsieh et al. 2004; Gummesson 1998; Gronroos and Ojasalo 2004; Sekhon et al. 2016).

This, thus, calls for a better understanding of customer readiness for co-production from the customer perspective, as this understanding is fundamental for an efficacious technology-based services and for a successful transfer of service activities from firms to customers. It is against this backdrop that this study seeks to empirically identify the antecedents and corollary of customer readiness for co-production in technology-based services using the M-banking services as a context. In addressing the aforementioned research objective, this paper is structured as follows: first, the literature relating to the study including the research model and hypothesis is discussed, followed by a discussion of the research methodology. Following that, the empirical findings are discussed, and finally, the contribution and limitations of the study are discussed.

Conceptual development

Customer participation, co-production and co-creation in services

Customer participation in organisational production process has long been recognised in operations management and service marketing literature (e.g. Mills and Morris 1986; Bitner et al. 1997; Bendapudi and Leone 2003; Yalley and Sekhon 2014; Ajitha et al. 2019). Customer participation has been described as the extent of customer involvement in the production of a service (Dabholkar 1990; Chan et al. 2010) and has also been identified as entailing customers' emotional, mental and physical resources (Bateson 1992; Rodie and Kleine 2000). Also, research on customer participation in services has focussed on customer impact on economic and relational value, service quality, customer satisfaction, productivity, profitability and competitive advantage (e.g. Rodie and Kleine 2000; Bateson 2002; Ramaswamy 2008; Chan et al. 2010; Grisseman and Stokburger-Sauer 2012; Sekhon et al. 2016; Ajitha et al. 2019) with some scholars recognising customers as value enhancers or detractors (Lengnick-Hall 1996; Bendapudi and Leone 2003; Ojasalo 2003; Edvardsson et al. 2010; Sekhon et al. 2016).

Further, the increasing importance of customer participation in services has also led to the recognition of customers as value co-creators and operant resources (eg. Prahalad and Ramaswamy 2000; Vargo and Lusch 2008; Spohrer and Maglio 2010; Jacob and Rettinger 2011) with some scholars relating customer participation in services to co-production and co-creation (eg. Vargo and Lusch 2004; 2008; Humphreys and Grayson2008; Fragidis et al. 2014); categorising different co-production types (eg. Chathoth et al. 2013; Yalley and Sekhon, 2014; Brandsen and Honingh 2015; Kleef and Eijk 2016); and recommending strategies for improving customer role during co-production (e.g. Lovelock and Young, 1979; Schneider and Bowen 1995; Lengnick-Hall 1996; Bettencourt et al. 2002; Ford and Dickson 2012; Yalley 2020).

Prominent amongst these scholarly works is the service-dominant logic, which recognise customers as active participants and operant resources in the value creation process

[1] Customer-only co-production and technology-based services will be used interchangeably.

with value being co-created by the firm and the customer through the interaction and integration of resources, skills, knowledge and competences (Vargo and Lusch, 2008). Related to this logic is the concept of co-production, which is sometimes confused with its sister concept co-creation, with several scholars recognising these concepts as either related, unrelated or interchangeable (e.g. Ballantyne and Varey, 2006; Gebauer et al. 2010; Voorberg et al. 2014); however, as explained and clarified, these concepts although related, they are also distinct (Lusch and Vargo 2006; Ajitha et al. 2019).

Co-production relates to customer substituting, complementing, collaborating or enhancing the service provider in the service production and delivery process (Humphreys and Grayson 2008; Fragidis et al. 2014), whilst co-creation relates to customers' active involvement in the service consumption process and is characterised as experience-centric (Prahalad and Ramaswamy 2000; Lusch and Vargo 2006; Lusch et al. 2007; Chathoth et al. 2013). Additionally, some scholars have related co-production and co-creation to transactional and non-transactional customer activities, respectively, as well as mandatory and non-mandatory customer activities, respectively (Van Doorn et al. 2010; Verhoef et al. 2010; Fragidis et al. 2014).

From the above discussion, co-creation relates to customer's participation and cooperation in the non-transactional and non-mandatory activities of the value consumption process whilst co-production relates to customer's participation and cooperation in the transactional and mandatory activities of the value creation process. Relating this to the M-banking context, co-creation involves customer provision of feedback, rating and recommendations after an M-banking transaction. These activities are beyond purchase and experience-centric as well as non-transactional and non-mandatory (Vargo and Lusch 2008; van Doorn et al. 2010; Verhoef et al. 2010; Chathoth et al 2013). Co-production, on the other hand, involves customer registration and account opening, signing-in, adhering to pre-set procedures/instructions, providing security information, funds transfer and cheque book request. These activities are transactional and mandatory in nature and require banks to develop and provide technological platforms in transferring co-production activities to customers. This according to Prahalad and Ramaswamy (2000) relates to co-production and conforms to Fragidis et al. (2014) view that co-production allows banks to transfer activities they normally performed to their customers.

Customer-only co-production

Co-production has been categorised using customers' level of participation in services into four main types. These are: organisation-only co-production; organisation and customer co-production; customer-only co-production; and customer and other customer(s) co-production (Meuter and Bitner 1998; Zeithaml and Bitner 2000; Grönroos and Ojasalo 2004; Yalley 2012; Yalley and Sekhon 2014). Amongst these, customer-only co-production, which refers to the customer producing the service in isolation from the service provider and other customers, has been an emerging trend over the last two decades in most organisations particularly the financial services sector as a result of the ever-increasing technological advancement, access and speed of mobile and internet technologies.

Customer-only co-production allows organisations to transfer transactional and mandatory activities to their customers by providing the necessary technological resources and platforms (Prahalad and Ramaswamy 2000; Fragidis et al. 2014). This, thus, implies that the customer's operant resources, which refers to the intangible dynamic resources of the customer including knowledge, skills and motivation, are imperative for a successful customer-only co-production (Constantin and Lusch 1994; Vargo and Lusch 2004; 2008). As explained, customer's operant resources are a necessity in ensuring successful value co-production and in attaining efficiency, effectiveness and sustainable competitive advantage in services (Helfat and Peteraf 2003; López Rodríguez and García Rodríguez 2005; Vargo and Lusch 2008; Nath, et al. 2010).

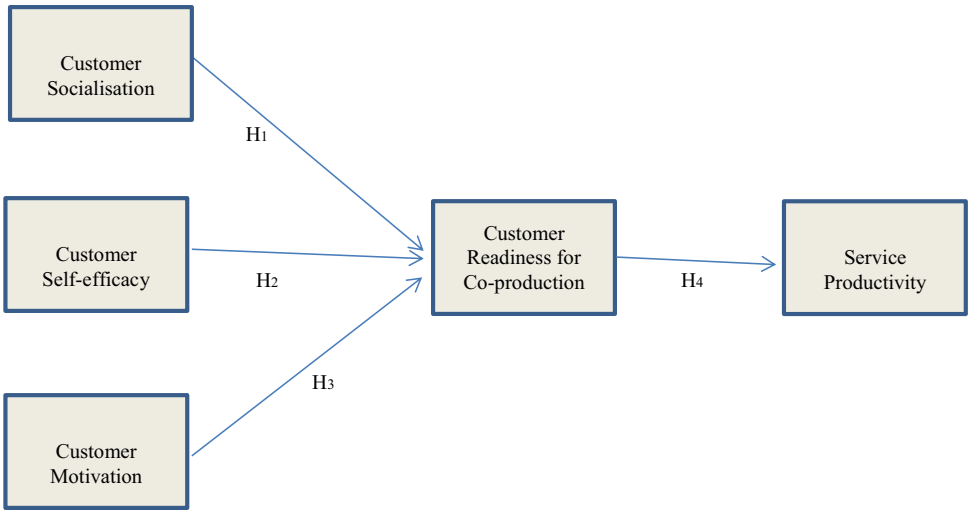
Research model and hypothesis

Based on the foregoing discussion, this paper takes the position that customer-only co-production can best be understood, conceptualised and managed strategically by understanding the factors impacting on customer's readiness for co-production and its outcome. Using an extensive review of literature from a multidisciplinary perspective, this study conceptualised customer readiness for co-production and developed a theoretical model linking its antecedents and corollary. The antecedents of customer readiness for co-production were customer socialisation, customer self-efficacy and customer motivation and the corollary was service productivity. Based on this, a research model and its accompanying four hypotheses were proposed and tested (see Fig. 1).

Customer readiness for co-production

The importance of customer participation in services compelled several scholars in recognising customers as part-time employees; therefore, their readiness to participate in services is critical to service performance (Mills and Morris 1986; Gummesson 1998; Grönroos 2017). In understanding customer readiness to co-produce service, Opata and colleagues have conceptualised this as "customer willingness to participate in value co-creation"

Fig. 1 Research model



(Opata et al. 2019) whilst others have conceptualised this as "Willingness of a Customer to Co-create (WCC)", which they defined as "a condition or state in which a customer is prepared and likely to create value together with the company by actively engaging in the service provision and consumption" (Heidenreich and Handrich 2015: 46). Other have further conceptualised this as customer readiness, which refers to a customer's state of preparedness to engage in co-production (Yalley and Sekhon 2014; Sekhon et al. 2016) with some scholars identifying customer readiness as moderating the relationship between consumers' attitudes and intention to use M-banking (Frimpong et al. 2017).

Relating the concept of customer readiness to the customer-only co-production context, this paper proposed "customer readiness for co-production" and defines it as a customer's preparedness to perform their co-production role successfully in isolation from the service provider and other customers. For customers to be prepared in performing their co-production role successfully, it requires that organisations manage their customers in similar ways as they manage their employees by adopting human resource management practices to the customer co-production scenario (Bowen 1986; Schneider and Bowen 1995; Zeithaml and Bitner 1996). In this regard, some scholars have identified customer socialisation (e.g. Alba and Hutchinson 1987; Kelley et al. 1990; 1992; Zeithaml and Bitner 1996; Galt 2000); customer self-efficacy (e.g. Alba and Hutchinson 1987; Lengnick-Hall 1996; Meuter et al. 2005; Yalley 2020); and customer motivation (e.g. Schneider and Bowen 1995; Lengnick-Hall 1996; Zeithaml and Bitner 1996; Meuter et al. 2005; Auh et al. 2007; Yalley 2020) as factors influencing customer readiness for co-production. And, although others may argue that there are numerous antecedents of customer readiness for co-production, notwithstanding, extant literature has identified customer socialisation, self-efficacy and motivation as critical factors influencing customer readiness for co-production.

Customer socialisation

Socialisation relates to the process an individual goes through to secure appropriate job skills and knowledge and adapts to the organisational culture in order to perform positively (Louis 1980; Taormina 1997). Customer active involvement in services particularly in customer-only co-production requires that customers are socialised formally and informally in equipping them with the necessary skills and knowledge to perform their co-production role successfully. Formal customer socialisation relates to the prescribed training and orientation offered to new and current customers on organisational culture and processes. Informal customer socialisation in contrast relates to customer self-taught knowledge on organisational culture and processes by observing other employees and other customers (Ashforth and Saks 1996; Govender 1998). Scholars have identified customer socialisation as an enabler in the successful performance of a customer's co-production role (Zeithaml and Bitner 1996; Govender 1998). As explained, customer socialisation enhances customers' ability in acquiring organisational values and skills to perform their required role during co-production (Zeithaml and Bitner 1996; Kotzé and Plessis 2003). Customer socialisation, thus, minimises customer role ambiguity and improves customer willingness to co-produce (Kelley et al. 1990; Saks et al. 2007; Avey et al. 2011; Bauer and Erdogan 2012; Saks and Gruman 2014). Therefore, it can be concluded that organisations that socialise its customers in preparing them for co-production will have a positive effect on customer's preparedness to engage in co-production. Thus, suggesting that:

H1 Customer socialisation is positively related to customer readiness for co-production.

Customer self-efficacy

Customer participation in services requires customers to have a positive attitude towards his/her ability to execute their co-production roles successfully; thus, the customer's self-efficacy is central. Self-efficacy refers to an individual assessment of their capability to perform an assigned task successfully (Bandura 1982), and within the customer domain, it relates to customer's belief that they have the requisite skills, knowledge and ability in performing an expected co-production role effectively (Luo et al. 2010; Yalley 2020). Customer self-efficacy has been identified as influencing customer preparedness to execute their co-production role (Bandura 1982; Randhawa 2004; McKee et al. 2006; Yalley 2020), and customers with high self-efficacy are highly prepared to undertake co-production roles than their counterpart with low self-efficacy (Locke et al. 1984). Therefore, it can be inferred that:

H2 Customer self-efficacy is positively related to customer readiness for co-production.

Customer motivation

Motivation is a topical issue when it comes to individuals and organisational performance and is defined as "a person's active participation in and commitment to achieving the prescribed results" (Conroy 1994: 14). Several scholars have observed that customers may engage actively during co-production when they are motivated intrinsically and extrinsically (Mills and Morris 1986; Larsson and Bowen 1989; Rodie and Kleine 2000; Kotzé and Plessis 2003; Opata et al. 2019; Yalley 2020). Intrinsic motivation involves customers finding co-production enjoyable and pleasurable whilst extrinsic motivation involves customers finding co-production less costly and time-saving (Bateson 1985; Gagné and Deci 2005; Nambisan and Baron 2009; Yalley 2020).

Relating motivation to customer readiness for co-production, several scholars have identified a positive relationship between customer motivation and customer readiness or preparedness to engage in co-production (Fuchs 1968; Lengnick-Hall 1996; Meuter et al. 2005; Sekhon et al. 2016; Yalley 2020). The aforementioned conceptualisation suggests that:

H3 Customer motivation is positively related to customer readiness for co-production.

Service productivity

Despite the recognition of customers as active participants in the service production system and the call for a dual (i.e. firm and customer)-service productivity perspective (Parasuraman 2002; Yalley and Sekhon 2014), existing conceptualisation and measures of service productivity have been firm focussed whilst the customer perspective has been ignored (Anitsal and Schumann 2007). Firm productivity emphasise the harmonisation and maximisation of efficiency and effectiveness of a firm's inputs and outputs (Sheth and Sisodia 2002; Grönroos and Ojasalo 2004; Yalley and Sekhon 2014; Yalley 2012; Sehkon et al. 2016). However, its sole focus has been criticised of being firm focussed, provider induced and manufacturing oriented (Gummesson 1998; Anitsal and Schumann 2007; Yalley and Sekhon 2014).

The limitations associated with firm-only service productivity have, thus, galvanised others in calling for a customer perspective of service productivity conceptualisation (e.g. Johnston and Jones 2004; Anitsal and Schumann 2007). Customer productivity also termed customer efficiency or client productivity (Martin et al. 2001; Xue and Harker 2002) focuses on customer output (e.g. experience, service quality, outcome and value) and customer input (e.g. time, effort and costs) in the delivery of a service (Parasuraman 2002; Anitsal and Fairhurst 2003; Johnston and Jones 2004). Others have also categorised customer productivity into transaction efficiency, value efficiency and quality efficiency (Xue and Harker 2002).

In their seminal paper focussing on technology-based self-service, Anitsal and Schumann (2007) conceptualised customer productivity as encompassing customer input (i.e. perceived degree and quality of customer's cognitive, physical and emotional effort), customer output (i.e. perceived customer's effort and time savings and the perceived quality of the technology-based self-services) and overall outcome (i.e. customers' perceptions of their productivity). Taking on board the aforementioned conceptualisation of customer productivity, this paper relates service productivity within the customer-only co-production context as encompassing customer outcome (i.e. customer experience, service quality and value) and customer input (time, effort and costs) in co-producing service alone.

In understanding the customer's impact on service productivity from the customer-only co-production perspective, various scholars have identified the customer's role as a co-producer as influencing service productivity (Zeithaml and Bitner 1996; Bendapudi and Leone 2003; Johnston and Jones 2004; Sekhon et al. 2016). For example, Ojasalo (2003) cited examples of customer's negative impact on service productivity whilst Bateson (1992) argued otherwise. However, as argued by Zeithaml and colleagues, customer's impact on service productivity is dependent on customer's

readiness to co-produce (Zeithaml and Bitner 1996; Bitner et al. 1997), thus affirming the view that customer's preparedness to co-produce influences service productivity (Fuchs 1968; Grönroos 2017) and supports the empirical findings of Sekhon and colleagues that customer readiness for co-production positively influences service productivity (Sekhon et al. 2016). Therefore, it can be argued that:

H4 Customer readiness for co-production is positively related to service productivity.

Methodology

Sample selection and questionnaire administration

The structured questionnaire for this study was developed in the English language using existing scale items and rated on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The target population consisted of M-banking customers in Ghana and the UK. Ghana and the UK provided an ideal context for the study as they each reflect different socio-economic motivates for using M-banking as well as representing a developing and developed economy, respectively. However, in terms of M-banking adoption, both countries have demonstrated a positive trend. For instance, Ghana has become the fastest-growing mobile money market in Africa with about 27% M-banking adoption rate as of 2019 (Ozyurt 2019). Also, a report from PricewaterhouseCoopers revealed that M-banking transactions in Ghana reached an all-time high with some banks recording over 200% growth as a resulting of the ongoing COVID-19 pandemic (PWC 2020). The UK, also, according to FinderUK recorded about 23% adoption rate as of 2019 and it is projected that by 2024, the adoption rate will reach an all-time high of about 70% (FinderUK 2020; The Guardian 2019).

Prior to the data collection for the main study, the questionnaire was pilot tested to evaluate and refine the questionnaire before the main study. Given the transnational nature of this work, 30 questionnaires were each distributed to mobile banking customers in Ghana and the UK to evaluate the statement items and instructions in terms of their clarity, simplicity, relevance, grammatical errors and presentation. Analysis of the pilot study results revealed certain deficiencies in the questionnaire instructions, item statements and response scale. These were revised, and finally, two academic experts in questionnaire design and marketing were used in finalising the questionnaire.

The final questionnaire was administered to a sample of M-banking customers in Ghana and the UK. Two banks each in Ghana and the UK were conveniently and purposively selected based on the bank having adopted M-banking services in the last three years. Attempt to use a simple random sampling technique failed as the selected banks refused to make available the list of customers who have enrolled on their M-banking platforms due to confidentiality reasons; thus, the researcher resorted to using non-probability sampling. Questionnaires were left with the staff of the selected banks to be handed to customers, and respondents were selected conveniently and purposively if they have used M-banking services for three months or more.

Table 1 Respondents demographic information

Demographic variable	Ghana		UK	
	%		%	
Age	18–30	51	18–30	43
	31–50	38	31–50	30
	51–64	11	51–64	27
Gender	Male	55	Male	49
	Female	45	Female	51 +
Length of M-banking usage	3–12 months	31	3–12 months	25
	More than a year	69	More than a year	75

Appropriate ethical protocols were observed, and consents were obtained from both the selected banks and prospective participants before administrating the questionnaires; 250 questionnaires were each distributed in Ghana and the UK to prospective respondents. Out of the 250 questionnaires distributed each in Ghana and the UK, 172 and 187 usable questionnaires were returned, respectively, totalling 359 usable questionnaires and representing 62% response rate. The same size was appropriate in undertaking a SEM analysis per the recommendation of 100 samples and above (Hair et al. 2006).

Amongst the respondents, 47%, 34% and 19% were between the ages of 18–30, 31–50 years and over 50 years, respectively, and 52% and 48% were males and females, respectively. Also, 72% have used M-banking services for more than a year whilst the remaining 28% have used the service between three months and a year. Table 1 presents the respondents' demographic breakdown of each country. Also, Table 2 presents the content for the scale items and their respective communalities whilst Table 3 presents the descriptive summary statistics for the scale items.

Measures

Customer readiness for co-production

It is defined as "a customer's state of preparedness to perform co-production role successfully" (Sekhon et al. 2016,

Table 2 Final Scale Items and Communality

Construct /Item	Code	Communality
Customer motivation (CM)—Cronbach alpha = .96	CM1	.91
I use mobile banking service because I enjoy using it	CM2	.92
I use mobile banking service because its enjoyable	CM3	.84
I use mobile banking service because of the pleasure it brings to me	CM5	.93
I use mobile banking service because it saves me money		
Service productivity (SP)—Cronbach alpha = .95	SP1	.89
My banking transactions has increased since I enrolled on mobile banking	SP2	.88
The use of mobile banking service is efficient and effective in my day-to-day financial transactions	SP3	.89
Mobile banking service delivers its services promptly	SP4	.86
Mobile banking service meets my banking expectations		
Customer socialisation (CS)—Cronbach alpha = .96	CS1	.86
My mobile banking service provider keeps me informed	CS2	.88
My mobile banking service provider explains the service to me in a meaningful way	CS3	.85
My mobile banking service provider explained to me the pros and cons of using mobile banking services	CS4	.82
My mobile banking service provider has provided excellent guidelines about my role in using mobile banking services	CS5	.80
My mobile banking service provider instructions and guidelines have enabled me to fulfil my role	CS6	.84
Instructions given by my mobile banking service provider have been valuable in helping me to better fulfil my role		
Customer readiness to Co-production (CR)—Cronbach alpha = .96	CR1	.95
I am highly motivated when using mobile banking services	CR2	.91
I cooperate with my mobile banking service provider	CR3	.94
I prepare before using mobile banking services		
Customer self-efficacy (CSE)—Cronbach alpha = .96	CSE4	.77
When facing challenges using mobile banking services, I am certain that I will overcome it	CSE5	.94
I believe I will succeed in making a mobile banking transaction	CSE7	.94
I am confident that I can perform effectively when using mobile banking services	CSE8	.97
Compared to other people, I can do most mobile banking transaction very well		

Table 3 Summary and Normality Descriptive Statistics for Scale Items

Variable	Min	Max	Skew	Kurtosis	C.R	Mean	Std. deviation	Variance
CM1	1.000	5.000	− .832	.132	.510	3.59	.959	.919
CM2	1.000	5.000	− .832	.085	.329	3.62	.969	.939
CM3	1.000	5.000	− .926	.273	1.054	3.66	1.042	1.086
CM5	1.000	5.000	− .780	− .131	− .506	3.48	1.000	.999
SP1	1.000	5.000	− .944	− .062	− .241	3.51	1.075	1.156
SP2	1.000	5.000	− 1.126	.151	.585	3.46	.985	.970
SP3	1.000	5.000	− .906	− .152	− .586	3.46	1.056	1.115
SP4	1.000	5.000	− 1.164	.267	1.032	3.49	.942	.888
CS1	2.000	5.000	− .948	1.119	4.328	3.87	.747	.557
CS2	2.000	5.000	− 1.039	1.073	4.151	3.84	.772	.596
CS3	2.000	5.000	− .890	.865	3.346	3.93	.785	.616
CS4	2.000	5.000	− .851	.685	2.647	3.86	.785	.616
CS5	2.000	5.000	− 1.027	1.035	4.004	3.79	.744	.553
CS6	2.000	5.000	− .831	.832	3.217	3.88	.761	.578
CR1	1.000	5.000	− .952	− .416	− 1.609	3.33	1.051	1.105
CR2	1.000	5.000	− .810	− .245	− .949	3.50	1.000	.999
CR3	1.000	5.000	− .805	− .483	− 1.867	3.39	1.016	1.032
CSE4	1.000	5.000	− .905	− .112	− .435	3.92	1.079	1.165
CSE5	1.000	5.000	− 1.097	.833	3.221	3.68	.943	.890
CSE7	1.000	5.000	− .974	.515	1.991	3.69	.930	.864
CSE8	1.000	5.000	− .904	.280	1.081	3.68	.915	.837
Multivariate				194.007	59.135			

p. 4). This was measured using Sekhon et al.'s (2016) 3-item customer readiness scale with very high reliability (Cronbach alpha = 0.94[2]). The present study reworded the items to fit the context of mobile banking, and it had very high reliability (Cronbach alpha = 0.96).

Customer socialisation

It is defined "as the process by which a person secures relevant job skills, acquires a functional level of organisational and accepts the established way of the organisation" (Taormina 1997, p. 29). This was measured using Verleye et al. (2014) 6-item scale for organisational socialisation with very high reliability (Cronbach alpha = 0.92). This was developed using three items from Sharma and Patterson (1999) communication effectiveness scale and three items from Taormina (2004) training scale. The reliability of the present study was very high (Cronbach alpha = 0.96).

Customer self-efficacy

It is defined as "people's judgments of their capabilities to organise and execute courses of action required to attain designated types of performances"(Bandura 1982: 391). The 8-item New General Self-Efficacy Scale (NGSS) developed by Chen et al. (2001) with high reliability (Cronbach alpha = 0.87) was employed. Four items were deleted as a result of the items having low communalities[3] and failing to demonstrate a clear factor solution. Subsequently, an evaluation of the remaining four-scale items led to very high reliability (Cronbach alpha = 0.96).

Customer motivation

It is defined as "a person's active participation in and commitment to achieving the prescribed results" (Conroy 1994: 14). This was measured using Gagné et al. (2010) 3-item intrinsic motivation and 3-item external regulation motivation sub-scale from the Motivation at Work Scale (MAWS) with high reliability (Cronbach alpha = 0.86). Two items relating to extrinsic motivation were deleted as a result of the items having low communalities and failing to demonstrate a clear factor solution. Subsequently, further evaluation of the remaining 4- items led to a one-factor solution and resulted in very high reliability (Cronbach alpha = 0.96).

Service productivity

It relates to customer outcome (i.e. customer experience, service quality and value) and customer input (time, effort and costs) in co-producing service alone. This was measured using Sekhon et al. (2016) 4-item service productivity scale with very high reliability (Cronbach alpha = 0.94). The reliability of the scale items for the present study was very high (Cronbach alpha = 0.95).

Data analysis

The data obtained from the 27 items were assessed for normality, and from Table 3, the results indicated data normality with skewness and kurtosis values ≤ 3 and values ≤ 10, respectively. Also, all VIF < 5.0 with tolerance values between 0.18 and 0.39 and all inter-construct correlations < 0.85, thus demonstrating the absence of multicollinearity (Kline 1998; Hu and Bentler 1999; Chu 2010). Following that, the 27 items were subjected to an Exploratory Factor Analysis (hereafter, EFA[4]) using principal component analysis[5] and varimax rotation method.[6] The initial factor analysis identified four items relating to customer self-efficacy and two items relating to customer motivation *as* having low communalities and failing to demonstrate a clear factor solution. These items were subsequently deleted and the remaining 21 items as presented in Table 2 were further analysed resulting in a clear five-factor solution and a meritorious degree of variance amongst the items with a Kaiser–Mayer–Olkin index of 0.98 > 0.80[7] and Bartlett's test of sphericity significant at ($\chi 2(210) = 11{,}091$; $p < 0.001$).[8] From Table 2, the scale items' communalities were very

[2] Cronbach's alpha (α) is the most widely used measure for reliability or internal consistency of a scale. A ($\alpha \geq .70$) is recommended as indicating reliability of a scale (Hair et al. 2006).

[3] Communality measures the common variance in a variable, and values $\geq \pm .50$ are recommended as acceptable (Hair et al. 2006).

[4] Exploratory factor analysis is a scale purification procedure for ensuring that all items relating to a construct have an equal amount of common core and for ensuring unidimensionality and reliability of a newly developed scale (Gerbing and Anderson 1988). A Bartlett's test of sphericity significant at .05 or less and MSA $\geq .60$ is recommended as acceptable (Hair et al. 2006).

[5] Principal component analysis is a data analysis technique for identifying the number of underlying factors in a set of variables (Hair et al. 2006).

[6] Varimax rotation is a type of rotation method used to determine the loading pattern or the contribution of individual variables in the factor structure. Factor loadings $\geq \pm .50$, communalities $\geq \pm .50$; and no cross-loading items are the criteria for determining loading patterns (Hair et al. 2006).

[7] Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) is used to substantiate the need to undertake EFA and sufficiency of correlation among the variables, and a KMO > .80 is recommended (Hair et al. 2006).

[8] Bartlett's test of sphericity is used to substantiate the need to undertake EFA and the degree of common variance among variables. A Bartlett's test of sphericity significant at .05 or less is recommended (Hair et al. 2006).

Table 4 Measurement Model Goodness-of-Fit Indices

Fit indices	Ghana (N = 172)	UK (N = 187)	Overall data (359)
$\chi 2$	372.30	395.49	421.27
df	177	177	177
$\chi 2$/df	2.10	2.23	2.38
TLI	.95	.96	.96
CFI	.96	.96	.97
RMSEA	.07	.07	.07

good, ranging from 0.77 to 0.97 with overall reliability of 0.98. Following that, the measurement and structural model was empirically assessed and validated through Structural Equation Modeling (AMOS 22) in testing the proposed research hypotheses. The CFI, TLI and RMSEA were used as the recommended fit indices for model fit reporting (Hu and Bentler 1999; Yalley and Agyapong 2017), and the data were tested separately for Ghana and the UK data before finally evaluating the overall data. Finally, the structural model's standardised path coefficients were evaluated for the proposed hypotheses.

Results

Measurement model results

The measurement model was evaluated separately using the Ghanaian data (N = 172) and the British data (N = 187) and finally with the overall data (N = 359). From Table 4, the measurement model demonstrated a good fit for the Ghanaian and British data and the overall data set. Subsequently, the validity and reliability of the proposed measurement model for the overall data were evaluated. The use of existing scales, a pilot study and two academic experts for evaluating the scales and the questionnaire demonstrated content and face validity. From Table 5, the measurement model demonstrated convergent validity as standardised factor loadings and (R^2) values were between 0.82 and 0.99 and 0.68 and 0.99, respectively, as well as its AVE, and composite reliability values were greater than 0.50 and 0.70, respectively (Hair et al. 2006). Also, discriminant validity was established as no item cross loaded (Kline 1998). Further, the measurement model demonstrated a very high reliability of 0.98, and from Table 2, the measurement model proved to be highly reliable amongst the scale items and their representative construct, thus demonstrating the construct reliability of the proposed model. Finally, using the common latent factor (CLF)[9] method in accounting for common method bias, the differences between the standardised regression values of the model with CLF and the model without CLF were <0.2; therefore, no external factors influenced the dataset and the proposed model is valid for continuing with the structural model test.

Table 5 Construct-Related Indices

Construct	Item	Standardised factor loading	R^2	AVE	Composite reliability
Customer motivation	CM1	.95	.93	.88	.97
	CM2	.97	.93		
	CM3	.84	.76		
	CM5	.93	.89		
Service productivity	SP1	.87	.75	.81	.94
	SP2	.94	.88		
	SP3	.85	.72		
	SP4	.94	.88		
Customer socialisation	CS1	.91	.83	.80	.82
	CS2	.93	.86		
	CS3	.90	.81		
	CS4	.87	.75		
	CS5	.87	.75		
	CS6	.90	.81		
Customer readiness to co-production	CR1	.96	.93	.90	.96
	CR2	.92	.84		
	CR3	.97	.93		
Customer self-efficacy		.88	.97		
	CSE4	.82	.68		
	CSE5	.96	.93		
	CSE7	.96	.92		
	CSE8	.99	.99		

Structural model and hypothesis results

The structural model was also evaluated separately using the Ghanaian data ($N = 172$), the British data ($N = 187$) and the overall data ($N = 359$). From Table 6, the structural model demonstrated a very good fit for the Ghanaian and British data and the overall data set. Also, the transition from the measurement to the structural model as prescribed by the two-step approach was stable as the parameter estimates differences for the measurement and structural model were acceptable ≤ 0.05 (Hair et al. 2006). Further, a significant part of the variance in the theoretical model was accounted

[9] Common latent factor (CLF) measures common method bias or the influence of external factors in a study. Using SEM through AMOS, this is determined by the differences between the standardised regression values of the model with a CLF and the model without a CLF and difference < .2 is acceptable (Podsakoff et al. 2003).

Table 6 Structural model goodness-of-fit indices and hypothesis results

Hypotheses	Ghana	UK	Overall data
H1: Customer socialisation ⇒ customer readiness to co-production	.32***	.09**	.19***
H2: Customer self-efficacy ⇒ customer readiness to co-production	.51***	.57***	.59***
H3: Customer motivation ⇒ customer readiness to co-production	.54***	.58***	.61***
H4: Customer readiness to co-production ⇒ service productivity	.79 ***	.81***	.80***

All coefficients are standardised

Overall data: $\chi 2 = 423.60$; df = 172; $\chi 2/df = 2.46$; TLI = .97; CFI = .98; RMSEA = .06

Ghana: $\chi 2 = 381.20$; df = 172; $\chi 2/df = 2.22$; TLI = .96; CFI = .97; RMSEA = .06

UK: $\chi 2$ 401.31; df = 172; $\chi 2/df = 2.33$; TLI = .97; CFI = .97; RMSEA = .06

***Significant at .001 (two-tailed)

**Significant at .05 (two-tailed)

for the two endogenous variables (customer readiness for co-production and service productivity) with R^2 of 0.67 and 0.55, respectively, thus demonstrating the robustness of the theoretical model. Given the robustness of the theoretical model in both countries and the overall data, the structural relationships of the hypothesised relationships were tested per country and for the overall data.

From Table 6, all hypotheses were supported, positive and significant across all the two countries and the overall data ($p < 0.001$and $p < 0.05$). Using Cohen and Kline recommended threshold for interpreting standardised path coefficient (Cohen 1988; Kline 2005), the testing of the hypothesised relationships resulted in hypothesis (H4, H3 and H2) having a large effect in both countries and the overall data, whilst hypothesis (H1) had a medium effect in Ghana and the overall data, with the UK having the smallest effect. The slight variation in effect with the data from Ghana and the UK led to further testing of respondents' country of residence in moderating the relationship between each antecedents variable (as independents variable) and customer readiness for co-production (as dependent variable) as well as the relationship between customer readiness for co-production (independent variable) and service productivity (dependent variable). This resulted in a statistically insignificant result at 0.05 (two-tailed), thus demonstrating that respondents' country of residence did not influence the findings of this work.

Discussion and conclusions

The inadequacy of empirical work on the antecedents and corollary of customer readiness for co-production within the customer-only co-production context paralleled with customer unwillingness to co-produce through M-banking services motivated the proposition and empirical testing of the comprehensive customer readiness for co-production model. Using M-banking services as a context, data were collected from a sample of Ghanaian and British M-banking customers to validate the proposed research model and hypotheses.

From the antecedent perspective, the findings acknowledged a positive link between customer socialisation and customer readiness for co-production and is consistent with the findings of several scholars who empirically observed a positive link between customer socialisation and customer readiness for co-production (Avey et al. 2011; Bauer and Erdogan 2012; Saks and Gruman 2014). This implies that when firms socialise its customers formally and informally, it enhances customers' readiness for co-produce the service. Also, the strong and positive relationship between customer self-efficacy and customer readiness for co-production conforms with the view that a customer's ability to perform a service co-production task successfully is dependent on his/her self-efficacy level and that higher self-efficacy is linked with customer's preparedness to undertake his/her co-production role (Locke et al. 1984; Randhawa 2004). This implies that when a customer has a positive attitude towards his/her ability to perform an expected co-production role, the customer will also be highly prepared to co-produce the service.

Further, from the findings, the strong and positive relationship between customer motivation and customer readiness for co-production is in line with similar findings of various scholars (e.g. Meuter et al. 2005; Hibbert et al. 2012; Sekhon et al. 2016). Examining the remaining scale items relating to the customer motivation scale after the EFA, the findings may be attributed to the intrinsic aspect associated with M-banking platforms including being exciting, engaging and user-friendly. Also extrinsically, it may be attributed to the reduced transactional cost associated with M-banking.

From the corollary perspective, the link between customer readiness for co-production and service productivity was supported, positive and strong, thus emphasising that when customers are prepared towards the co-production of M-banking services, service productivity will be enhanced. This is consistent with the finding that customer role in services influences service productivity (e.g. Bendapudi and

Leone 2003; Kotzé and Plessis 2003; Johnston and Jones 2004; Sekhon et al. 2016) particularly the performance of banks (e.g. Tam and Oliveira 2017; Mullan et al. 2017). The findings also confirm the view that customers can enhance value and service outcomes (Shostack 1987; Grönroos and Ojasalo 2004; Sekhon et al. 2016).

Finally, the statistically insignificant result in the cross-cultural evaluation of the proposed model demonstrates that culture has no influence on the findings of this work, and thus, it can be deduced that the proposed model is applicable in all cultures. The findings are consistent with similar cross-cultural works on customer readiness and service productivity (e.g. Sekhon et al. 2016); nonetheless, the findings also deviate from the findings of other scholars who identified cultural differences as influencing intension to use M-banking in Lebanon and the UK (Merhi et al. 2019).

In conclusion, the findings identified customer socialisation, motivation and self-efficacy as the antecedents of customer readiness for co-production and service productivity as its corollary. These factors provide insights on addressing the challenges with customer unwillingness to co-produce value and the productivity challenged faced by most customer-only co-production services particularly M-banking services.

Theoretical and managerial implications

The theoretical implications of this work are as follows. First, this work complements and expands the work of other scholars (e.g. Meuter et al. 2005; Auh et al. 2007; Ho and Ko 2008; Fragidis et al. 2014; Sekhon et al. 2016; Frimpong et al. 2017) by proposing the concept of customer readiness for co-production within the customer-only co-production context and by empirically identifying and testing its antecedents and corollary. Second, the findings provide empirical support for the call by several scholars for customer active participation in services (e.g. Gummesson 1998; Grönroos and Ojasalo 2004) by establishing a strongly positive relationship between customer readiness for co-production and service productivity.

Third, the findings extend the theoretical bases pertaining to the service-dominant logic, by recognising that customer's operant resources can be enhanced through socialisation, self-efficacy and motivation. It also reinforces the resource-based view that customers' valuable resources when managed and utilised effectively are critical to competitive advantage. Fourth, the findings extend the application of the theories on the norm of reciprocity to the co-production domain by establishing that when customers are socialised and motivated, they reciprocate by exhibiting positive behaviours during co-production.

The managerial implications are as follows. First, the findings reinforced the recommendations by several service marketing scholars on the application of human resources practices in enhancing customer effective participation in services (Bowen 1986; Bitner et al. 1997). The antecedent factors provide managers of M-banking and other technology-based services with the drivers for developing and enhancing customer readiness for co-production. For example, M-banking managers may enhance customer socialisation by developing user manuals using YouTube videos and other communications platforms in enrolling, inducting and socialising customers to M-banking platforms. Second, marketers and managers of M-banking and other self-service technologies in developing customers' self-efficacy should integrate environmental reinforcement cues that assure customers of the ease of using M-banking apps and other technological platforms in co-producing services. This may include developing rich content, user-friendly, navigational, interactive and secure apps and platforms as well as developing and providing free mock-up apps for customer trials.

Third, the identification of customer motivation as an antecedent of customer readiness of co-production provides clues for managers in the development of M-banking and other technology-based platforms by ensuring they are user-friendly, enjoyable and cost-effective for customers. These benefits need to be communicated persuasively to customers through the development of integrated marketing communications that promotes the advantages associated with M-banking services. It is by doing so will customers be motivated to engage in co-producing M-banking and other customer-only co-production services. Fourth for customer-only co-production services to be productive, managers should invest and develop measures in motivating and socialising customers as well as in developing customers' self-efficacy by adhering to the aforementioned managerial recommendations.

Finally, the identification of culture not having any influence on the application of the proposed model in different cultures implies that multinational corporations focussing on customer-only co-production services including technology-based services particularly multinational banks can standardised their service platforms and technology service delivery process across countries to harness the benefits associated with international standardisation including economies of scale in production, research and marketing.

Limitations and suggestions for further research

Although this research makes a compelling contribution to the research relating to customer co-production in customer-only co-production services particularly M-banking

services, some limitations were noted. First, this study in its attempt to measure customer's self-efficacy used a self-rating approach, which has the potential of respondents over-rating their responses to enhance their self-image. It is, therefore, recommended that future studies should attempt to measure social desirability when measuring customer's self-efficacy (Nasab and Makvandi 2016). Second, customers' technological readiness and the frequency of using M-banking services are important concepts in studies relating to customer readiness for co-production particularly in technology-based services. Future research should look into the role of these concepts on customer readiness for co-production.

Thirdly, customer knowledge, skills and expertise have been identified as affecting customer readiness as well as impacting customer's self-efficacy within the organisation and customer co-production context; future studies should look into the effect of these factors on customer self-efficacy and customer readiness for co-production within the context of customer-only co-production. Finally, this study was limited to M-banking services; future studies can look into other customer-only co-production contexts including ATMs, mobile money, airport self-check-ins, supermarket self-check-out, photo booth and self-service petrol stations.

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