

## **Understanding the stimuli, scope, and impact of organisational transformation: The context of eBusiness technologies in supply chains**

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### **Abstract**

With eBusiness technologies seen as a source of competitive edge, supply chains are facing organizational transformation. Despite the increase in sophisticated eBusiness technologies, interestingly organisational transformation results can vary across. The supply chain transformation has been widely explored in the context of standalone case studies focusing on either systems, relationships or implications of projects to supply or manufacturing risk. However, the research has been limited to address the underlying reasons of variance in organizational transformations effort. Therefore, the current study intends to explore the reasons behind organisational transformation variations across automotive supply chains. This study employs a case study in an automotive supply chain, followed by a questionnaire distributed to four automotive supply chains achieving 65 responses. The findings indicate that organisational transformation can vary based on the relationship between individual eBusiness technology and its stimulus (responsive, anticipatory and/or proactive); its scope (evolutionary versus radical change) and the extent of organisational transformation impact (departmental and/or business unit and/or supply chain level impact). Within this context the current study brings forth new findings in automotive supply chains in which the individual eBusiness technologies indicated a variance across the supply chains.

### **Introduction**

eBusiness technologies refer to web-based systems in supply chains (Johnson et al. 2007; Wiengarten et al. 2012) “span[ning] [through] traditional departmental boundaries” across supply chains from raw material supplier to the end customer (Martinez-Carro and Cegarra-Navarro, 2010: 491). Considering that eBusiness technologies enable digital distribution of information and process integration, the increase in eBusiness technology implementation had to be expected (Bak, 2016; Gupta, 2010; Johnson et al. 2007; Wiengarten et al. 2012). With the introduction of the Internet of things (IoT), smart factories enabling flexible and self-determined big data exchanges (Thoben et al. 2017) a “paradigm shift from automated manufacturing toward an intelligent manufacturing concept” called for organisational transformation across supply chains (Thoben et al. 2017:5). Despite the benefits of eBusiness technologies, there is still ongoing debate on the impact of these technologies in supply chains (Abraham and Junglas, 2011; Wiengarten et al, 2017, Thoben et al. 2017) with

variances observed across organisations implementation success (Van Donk, 2007; Wiengarten et al, 2012, Bak, 2016). The presence of variance of eBusiness technologies raised similar assumptions that “immense amount of uncertainty [is] associated with the diverse set of demands placed on the organization during transformation” (Kotnour, 2001:1053) as the change can come “in many shapes and sizes” (Burnes, 2004: 886) which makes it rather difficult for organisations and researchers to decipher. However, despite the growth and sophistication of eBusiness technologies, there is a lack of emphasis on organisational transformation in supply chain context (Bak, 2015; Wiengarten et al. 2012; Thoben et al. 2017). Especially, where organisational transformation requires a fundamental change in operational paradigms, practices throughout the organisation (Bak, 2016; Matthews et al. 2017). The research on organisational transformation has concentrated on the content of change, driven by the questions such as how, to which extent, and under which circumstances supply chains can or need to transform, and whether the transformation is beneficial at all (Abraham and Junglas, 2011; Bak, 2016; Kotnour, 2001; Matthews et al. 2017). Although the socio-technical theory evaluated the nature of the transformation, it broke the transformation down to impact areas such as the processes, people, structure, technology and culture (Kovacic et al. 2004; Oesterreich et al. 2019). Although the impact of these five elements are important, as “eBusiness [technologies] in particular have been widely used to transform business processes and create entirely new business models” (Wiengarten et al. 2013:26), leading supply chains in high uncertain areas where they have much to learn (Prahalad and Oosterveld, 1999; Bak, 2016; Daniel and Wilson, 2003). Hence this study will try to answer the following question; What are the organisational transformation implications of eBusiness technologies in automotive supply chains?

With this aim, the remainder of this paper is organized as follows. We first set out the theoretical background of our research. We then outline the research approach and introduce the case firm, and also outline the sources of data and explain our data analysis procedure. This is followed by our findings on how the organizational transformation differed between supply chains and the underlying mechanisms that link organizational transformation success. In the discussion section, we explore the

contributions and practical implications of our findings. Finally, some inherent limitations and avenues for future research are given.

### **eBusiness-enabled organizational transformation in supply chain**

The supply chain research indicated that eBusiness technologies can trigger organisational transformation which can stem from; (a) the need why the supply chain and/or needs to transform here referred as to stimulus, (b) the scope of transformation, whether the organisational transformation will be radical or evolutionary taking place over years; and (c) the process of transformation, to what extent the organisational transformation will affect the supply chain (Abraham and Junglas, 2011; Volmann, 1996; Matthews et al. 2017).

#### ***Understanding the need for transformation: The Stimulus***

The stimulus can be defined as factors and reasons that affect internal states of the individual business and questions “why the supply chain needs to transform?” (Abraham and Junglas, 2011; Matthews et al. 2017). Francis et al. (2003) included several reasons why organizations undergo transformation, which can be a result of a potential opportunity that might provide a competitive edge or a result of a threat that the organisation is facing hence the need for transformation, and/or it can be combination of both (Fassoula, 2006; Bak, 2016). This may be because organisations “need to recognise the need to use a variety of approaches to change rather than favouring one in all situations” (Burnes, 2004:887). Therefore, the stimulus, why an organization need to transform can be threefold (Abraham and Junglas, 2011; Volmann, 1996; Matthews et al. 2017);

- (1) *Responsive Reasoning*: In this context the need for transformation results from monitoring the market, especially the competition. The idea behind the transformation rest upon to realign the organisation in order to remain competitive. This stimulus is driven generally by external pressures that the organisations face.
- (2) *Anticipatory Reasoning*: The anticipatory reasoning for transformation is a result of future planning, including scenarios, if-then analysis and/or discussion of potential innovations over the long-run, all of which may have an impact on

the organisation survival. The anticipatory reasoning is particularly serves as a preparation to future threats and potential future market changes.

- (3) *Proactive Reasoning*: In this transformation case less attention is being paid to market conditions and environmental changes, but it is rather a response driven by senior management and/or visionary idea, without a response neither to external nor to internal pressures. For example, in the business-to-business (B2B) technology in the supply chain was initiated by senior management as a proactive stimulus (Au and Ho, 2002; Bak ,2016; Mahmoud and Miller 2017) based on improvement rather than in response to external pressures (Wiengarten et al. 2013)

Although responsive reasoning is easy to observe and to communicate, communicating the anticipatory and proactive stimulus across the supply chain remains one of the challenges (Bak, 2016). Hence, it is important to engage all the stakeholders collaboratively, as otherwise the lack of communication can lead to low involvement of employees in the transformation processes (Gębczyńska, 2016).

### **Understanding the speed of transformation: The Scope**

The *scope* of transformation refers to speed of change, whether it does entail a radical/revolutionary short-time frame change versus evolutionary change over long-term in several stages (Kanter et al. 1992). The scope of organisational transformation hence can vary ranging from short-term once for all effort to one lasting several years (Anastaad and Igrara, 2013; Anderson et al., 1985; Bak, 2016). Considering that transformation scope of a supply chain, which entails diverse members, the change process can become hence rather problematic and time consuming (Bak, 2016; Jordan and Bak, 2016; Fernie and Thorpe, 2007, Wiengarten et al 2013), especially the transformation will require a range of “time [scales] to adopt new tools and processes” (Power and Sighn, 2007). Researchers in many cases are reluctant to give an exact time frame for eBusiness enabled organisational transformation, but rather note that it is dependent upon individual eBusiness technology, this is by their very nature as transformation scope can vary in supply chains (Walton and Gupta, 1999; Bak, 2011). For example “RFID system can result in an evolutionary change incorporating legacy

systems with the real-time supply chain management of tomorrow” (Attaran, 2007: 255).

### **The processes of organizational transformation impact**

Process is defined as ‘a set of logically related tasks performed to achieve a defined business outcome’ (Vollmann, 1996, p. 60). Wiengarten et al (2013:26) noted that “a perception [is evident] that wider and deeper use of eBusiness technologies must always be beneficial”. However, the eBusiness enabled organisational transformation results vary in supply chains, this variance in implementation results can also stem from eBusiness technologies utilised by many users (Bakker et al. 2007; Wamba and Chatfield, 2009) versus to eBusiness technologies used only by individual departments and even individuals (Cagliano et al. 2003; Power and Simon, 2004; Wiengarten et al. 2012). A study carried out in a chemical supply chain has shown that gradual implementation lasting several years may not only be feasible, but also effective depending on the supply chain process scope. Attaran (2007:255) notes that the process scope is impacted by “IT experts [who] must determine how to integrate [the eBusiness technology] with existing supply chain management, customer relationship management, and enterprise resource planning technologies with the entire system”. The process refers to three areas of equal importance; one that is at individual levels (where transformation is relevant to some individuals and their processes); business unit level (where transformation is relevant to one or more business unit in the supply chain) and supply chain level (one that has supply chain wide implications) (Bak, 2016).

Researchers have suggested that individual eBusiness technologies characteristics can contribute to the variance in organisational transformation impact for example eBusiness technology utilised by many users (Bakker et al. 2007; Wamba and Chatfield, 2009) versus to eBusiness technologies used only by individual departments and even individuals (Cagliano et al. 2003; Power and Simon, 2004; Wiengarten et al. 2012, Thoben et al. 2017). The individual eBusiness technology can have a different transformation impact on supply chains ranging from individual departments to business units to across supply chains. The organisational transformation impact may differ at these supply chain levels. In summary, according to the proposed framework, individual eBusiness technologies would impact on responses, the stimulus, which in

turn are expected to influence process and organisational transformation impact. This study further introduces the individual factor as the moderator in the relationship.

### **Research design and methodology**

In this study mixed methods have been used, as supply chain research on eBusiness technologies remained rather anecdotal (Johnson et al. 2007). Mixed methods allows the "...collection and analysis of both qualitative and quantitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research." (Creswell et al. 2003:212). The integration of both methods in mixed methods research setting has been seen more effective when considered to single approach designs; the integration allows the research question to be answered from different angles making inferences and including diversity of different views (Teddlie and Tashakkori, 2003). Teddlie and Tashakkori, (2003:11) notes that "A major advantage of mixed methods research is that it enables the researcher to simultaneously answer confirmatory and exploratory questions, and therefore verify and generate theory in the same study." (Teddlie and Tashakkori, 2003:15). The use of the mixed methods in this study intends to eliminate what Van Maanen (1979) refers as losing the touch between the concept and the measure by using the qualitative , and limited information flow about causation between variables (Currell & Towler, 2003), hence the mixed methods used in this study consisted of two stages.

#### ***Stage 1: The case study***

The first stage of the mixed methods study entailed an embedded case study in an automotive supply chain. The case study design allowed the much sought after in-depth understanding of eBusiness technologies and its transformation (Martinez-Carro and Cegarra-Navarro, 2010). The case study especially provides an empirical grounding for explanation (Voss et al., 2002). Within the case study in-depth interviews with executives and managers with diverse responsibilities and decision support roles were undertaken, allowing to evaluate the technologies from diverse angles. The case study company entailed app. 550 employees and involved two eBusiness technology implementation;

- (1) eBusiness Application with business-to-business integration (B2B) where customers and distributors had access to the organisations data and information involving scheduling and availability whereby access to information and level access is predefined by the organisation automatically, and
- (2) An internal system application (ISA) which involved the interaction between the suppliers and the organisation wherein organisation's suppliers have access to supply chain.

The implementation of both eBusiness technologies had several reasons including cost savings, time reduction and availability of real-time data, and limitations of existing systems. Each eBusiness technology raised a set of issues, for example the internal system application (ISA) resembled the existing internal platform, which meant that it required low start-up cost, less familiarization time and “facilitate[d] the flow of information to and from business partners, suppliers and customers, and thus intranets beyond the walls of [organisation]” (Gupta, 2010:111). In contrast business to business (B2B) system was driven by senior management which was a financial burden by the supply chain partners in terms of initial investment and need for infrastructure restructure.

### ***Stage 2: The questionnaire***

The second stage included a questionnaire exploring the impact on four other automotive supply chains, which was especially useful for establishing generalizability of findings (Eisenhardt, 1989; Singh and Sharma, 2014). Therefore, the second stage allowed a wider examination in two steps; the distribution of pilot questionnaire tested with gatekeepers, and expert academics for structure, readability, ambiguity and completeness. Based on the feedback the questionnaire instrument was refined which comprised of four sections;

- Section 1 included general demographics, which acted as “control variables” for the study;
- Section 2 included three elements of transformation; stimulus, scope, and process in order to capture the respondents' perception of the importance of prevailing eBusiness technology.

- Section 3 captured the level of impact at automotive supply chains (i.e. supply chain, business unit and individual).
- Section 4 captured to what level organisational transformation was observed.

The questionnaire was sent out along with a cover letter to six automotive supply chains, only four responded with a response rate of 65. The detailed characteristics of the surveyed sample are summarised below (Table 1).

**Table 1:** Demographics of questionnaire respondents

Title	Count	Percent	Title	Count	Percent
<b>Manager</b>	30	46.2	<b>Others</b>	25	38.4
Supply chain management	6		Customer Service	4	
Materials management	13		Project management	2	
Purchasing	11		Supply Chain Planner	5	
<b>Director</b>	10	15.4	Senior buyers	5	
Purchasing	3		IT staff	6	
Procurement	1		Administrators	3	
Materials management	2				
Supply management	1				
Operations	3				

The findings indicated that 81.6% of the total respondents have been working in the same organization over two or more years and from these 59.5% have been working over 5 years. This indicates also the respondents' understanding and capability in observing the impact of the eBusiness technologies within the supply chain setting the initial analysis for reliability indicated that all measures were acceptable as a minimum for Cronbach's coefficient alpha of 0.60 (Hair et al., 2011) (See below table 2).



**Table 2:** CFA Loadings, and descriptives

	Mean	SD	Variance	Factor loading	Cronbach's Alpha	% Variance Explained
<b>STIMULUS</b>						
<i>Responsive Reasoning (RES)</i>						
The reason for introducing this eBusiness technology was to identify and respond to customer needs	3.25	1.26	1.58	.806	.800	71.551
The reason for introducing this eBusiness technology was to reach the technological level of competitors	4.03	0.84	0.71	.616		
The reason for introducing this eBusiness technology was to follow the developments in the industry	3.68	1.05	1.11	.725		
<i>Anticipatory Reaction (ANT)</i>						
The reason for introducing this eBusiness technology was management vision	3.84	1.15	1.33	.686	.735	65.591
The reason for introducing this eBusiness technology was cost effectiveness in the future	3.59	1.24	1.55	.763		
The reason for introducing this eBusiness technology was speeding up the processes	4.20	1.10	1.22	.719		
<i>Proactive Reasoning (PRO)</i>						
The reason for introducing this eBusiness technology was to achieve internal coordination	3.87	1.13	1.28	.792	.828	.74507
The reason for introducing this eBusiness technology was to enable the coordination with suppliers	3.59	1.24	1.55	.743		
The reason for introducing this eBusiness technology was to increase efficiency through empowering employees	3.87	1.13	1.28	.701		
<b>FORMULATION SCOPE</b>						
This eBusiness technology created a radical change in our daily operations	2.52	.933	.871	.733	.748	67.309
Through the application of this eBusiness technology, we completely left the old system	2.73	.894	.799	.858		
With the introduction of this eBusiness technology, we experienced a radical shift in our values and internal processes	2.69	.871	.758	.864		
<b>PROCESS SCOPE</b>						
Through this eBusiness technology transformation happened at the individual department level	2.58	1.223	1.497	.852	.881	81.295
Through this eBusiness technology transformation happened at the business unit level	2.76	1.270	1.613	.951		
Through this eBusiness technology transformation happened at the supply chain level	2.94	.889	.791	.899		

## **Findings and Analysis**

The case study indicated that both eBusiness technologies, B2B and ISA are indeed of transformational nature, the drivers for the organisational transformation included; reduction of supply chain cost; the development of supply chain wide information platform. In order to evaluate the impact of the eBusiness technologies, respondents were asked to rank the eBusiness technologies based on their impact upon their supply chains. The questionnaire indicated that the highest impact in the supply chain was achieved by business to business, which accounted for 44.6 % of respondents, followed by ISA 43.1%, and specific of the shelf applications such as CRM and SRM with 12.3%. The transformational nature of the change has been highlighted with one interviewee noting that *“yes it is transformational nature, [as]we now have a completely new operating system....[It] has a direct impact on how we do the things around here... including structural changes ... training employees to use the system...new job definitions and division of tasks... some view this as additional workload, whereas others a necessity to compete.....”*. The fragment above from the interview indicated the overarching nature of transformation across the organisations supply chain, which confirms the understanding that eBusiness technologies can start a transformation based on the new technology platforms used (Bayraktar et al, 2007).

### ***Understanding the reason for transformation- The Stimulus***

The findings of case study indicated that B2B was a result of proactive reasoning, whereas the ISA was a responsive reasoning, with one interviewee noting that *“[w]e need[ed] to catch the bandwagon, but this is not always what we want to do, the application of this system [B2B] was a rather senior management’s decision. They [the senior management] believed it would be better to start now than later”*.

The findings from the data analysis indicated that there are significant differences between the stimulus based on individual eBusiness technologies. When looked into the strength of individual technology in terms of the proactive stimuli, we will recognise that the B2B stem more of a proactive reasoning, which is in line with the findings of first phase research findings (Table 2).

In the second phase the results indicated a contradictory picture where there is no significant difference in terms of responsive and anticipatory reaction, this can be linked to the pressure to reach to industry level standards. Teo et al. (1995) ascertains that one reason may be that organisations plan proactively to implement the eBusiness technology that might add improvement rather than those who participated due to external pressures. When compared to first stage findings, the results between the ISA and B2B the results indicated that both technologies had a different impact on the supply chain. Similarly, Francis et al. (2003) and Abraham and Junglas (2011) agree that stimulus might be driven by several reasons and therefore the transformation can stem from an opportunity to a result of a threat (Bak, 2016). The findings also support the research of Au and Ho (2002) who investigated a clothing supply chain and found that B2B was driven by proactive reasons reflecting on common goals and mutual dependence. Teo et al. (1995) reported a similar finding that organisations plan proactively the eBusiness technologies that might add to process improvement rather than driven by those of external pressures. When compared to case study findings, this also justified the assumption that the proactive motivation played an important role in B2B.

### ***Understanding the speed of transformation: The Scope***

In order to evaluate the scope of the transformation, the participants were asked to define the scope of transformation, which ranged from one to two years, however some noted series lasting over few years. Although the findings indicated an agreement of the transformation across the supply chain being observed, however it showed a difference based on individual eBusiness technology. The findings of the study indicated a difference on the impact of transformation of B2B compared to the ISA. One interviewee noted as *“I would see the ISA rather evolutionary in nature, whereas the introduction of B2B has been abrupt and revolutionary”*. Another interviewee noted *“for the ISA the picture was completely different, as we made use of our existing programme and platform .... [w]e were surer about our blueprint as the setting was similar to the existing systems and there was less infrastructure change required. This might be again due to the fact that we have been using already an existing platform”*. This statement underlined that the individual eBusiness technologies do differ in terms of whether they were encouraging an evolutionary or revolutionary scope. The findings of the questionnaire were in line with the expectations with one-way ANOVA

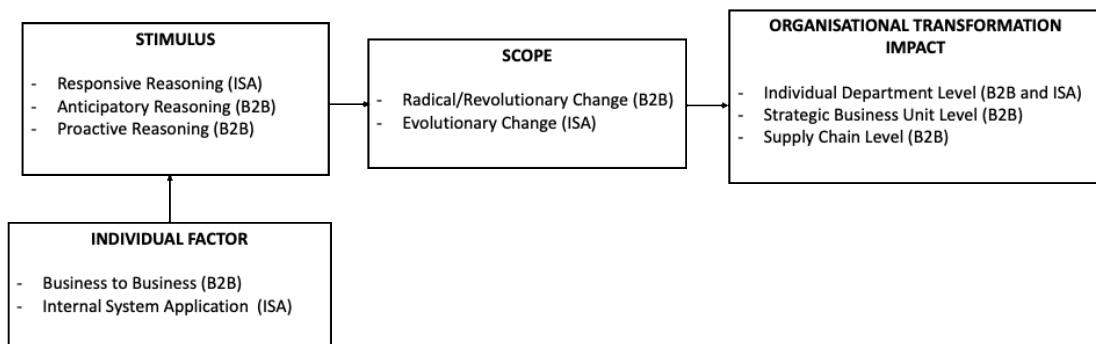
reporting a significant difference ( $p=.002$ ) between individual eBusiness technologies. When looked into the strength of the agreement of the respondents on revolutionary vs. evolutionary impact. This is also in line with the findings of Anastaad and Igrara, (2013), Anderson et al., (1985) and Bak (2016) who viewed differences in supply chain transformation time and challenges and addressed that these variances not only stem from supply chain transformation scope, but also from supply chains needing a varied “time [scale] to adopt new tools and processes” (Power and Sighn, 2007).

### ***Understanding the processes of organisational transformation impact***

Although the case findings indicated that individual eBusiness technologies have a different impact on the process, when tested in the questionnaire findings did not confirm, showing no significant difference ( $p=.094$ ). We do recognize that the most impact of the e-business technologies incurs at the business unit level, however, it remains an interesting finding that all technologies do have an impact on the whole supply chain. However, the ISA in the business unit had in some cases had different impact on the departments as the impact was relative to the use of the system and the related responsibilities and processes. However a point of caution relates to supply chain boundaries which may cross with other supply chains (Bak, 2012). Similarly, Francis et al. (2003) noted that organisations are much more complex at the supply chain level, as by their very nature “eBusiness [technologies] are cross functional and span traditional departmental boundaries” (Martinez-Carro and Cegarra-Navarro, 2010:491). The following fragment by an interviewee also highlights this issue noting that “[I]t includes [an] effort from all sides of the organization; however, we cannot and will not draw a line that separates our systems. We intend to include all aspects of our working environment in an efficient system environment... [We] all will at the end, benefit from the use of these systems.”

A similar finding was found by McIvor et al. (2003) where within organizations different functions or departments often had incompatible systems and objectives, hence the strategies to integrate and improve processes were varied. Although, a similar finding in the case study was observed with B2B creating complexity requiring substantial investment and training needs across the supply chain, with one interviewee noting that “[t]he B2B led to the creation of new processes for the business unit and its partners, this allowed time and cost reduction of processes throughout the supply

chain. Processes have been devised to leverage existing technical and business unit members, although it was important to revise the processes around the system, it was also important to understand the underlying supply chain processes”. However, this finding was not supported throughout the other four automotive supply chains, hence iterating that the individual differences may be relevant to each supply chain system, incompatibility fragments of individual eBusiness technologies based on Stimulus (Abraham and Junglas, 2011; Volmann, 1996; Matthews et al. 2017; Wiengarten et al. 2013); Scope (Attaran, 2007; Power and Sighn, 2007; Bak, 2016; Fernie and Thorpe, 2007; Power and Sighn, 2007) and organisational transformation impact (Power and Simon, 2004; Volmann, 1996; Bak, 2016; Cagliano et al. 2003; Power and Simon, 2004; Wiengarten et al. 2012, 2013).



**Figure 1.** Stimulus-Scope-Organisational Transformation (S-S-O) suggested framework

**Table 3:** Fragments of individual eBusiness technologies based on stimulus, scope and process

Categories	Data (from B2B Application)	Data from (ISA)
Stimulus for organisational transformation	<p><b>Combination of Stimulus :</b></p> <ul style="list-style-type: none"> <li>- The combination of proactive and responsive stimulus was promoted by top management, the employees were informed after the decision was taken.</li> <li>- From consultants’ point of view, the support of top management was important.</li> <li>- The reason for undertaking this effort lied in scanning the future developments in this area and how they can leverage it.</li> <li>- There was resistance as the system was not created by the internal-house capabilities</li> <li>- The strategic response; actions taken were in line with the new vision of the organization.</li> </ul>	<p><b>Responsive Stimulus :</b></p> <ul style="list-style-type: none"> <li>- The stimuli was a responsive reaction to the other companies investing in information technology for competitive advantage and started ISA.</li> <li>- The set-up for ISA was easier as it was similar to other in-house technologies.</li> <li>- Through the ISA the actions impacted was the individual needs were assessed and implemented within the systems boundaries.</li> <li>- As the system was similar to existing systems, the external partners were also informed about the possible impacts and actions that need to be taken (short-long term basis).</li> <li>- The vision and mission statement of the organisation was not impacted by the ISA. One reason was that it was in the similar nature to the existing Intranet.</li> </ul>
Scope for organisational transformation	<p><b>Revolutionary Change Scope :</b></p> <ul style="list-style-type: none"> <li>- The B2B was rather revolutionary nature, the system changed from the existing old system completely to a new system.</li> <li>- It was revolutionary change across the supply chain involving all supply chain members as it contained the from the raw material to the final customer the whole chain.</li> <li>- There were new ways of promoting and taking care of the after sales.</li> <li>- Although the product hasn’t changed as such, it did impact the connected services and how the B2B was set up. For example, B2B changed the way of service interaction; it improved the communication between the parties, although it did not have an impact on the product itself.</li> </ul>	<p><b>Evolutionary Change Scope :</b></p> <ul style="list-style-type: none"> <li>- This change was an extension to the existing systems, hence the change happened at evolutionary way. The evolutionary impact was also evident in several stages in the business units within the supply chain.</li> <li>- The simplicity of the use and the existing knowledge on other similar technologies such as Intranet, B2E lead to the evolutionary change of ISA.</li> <li>- ISA had no impact on the product; it influenced the distributor, supplier and the business triangle in that sense that they had an accessible platform 24/7 with the necessary data sets and connections for information.</li> <li>- The service has impacted with the ISA, and the main affected parties where the relationship between the supplier and the business unit members that interact.</li> </ul>
Process of organisational transformation	<ul style="list-style-type: none"> <li>- Creation of new processes for supply chain members which enabled a decrease in the time and cost of the processes throughout the supply chain</li> <li>- Processes have been devised to leverage existing technical and business unit members</li> <li>- Although it was important to revise the processes around the system, it was also important to understand the underlying processes.</li> <li>- Considering the B2B the extent of the change was rooted in the new processes, although it was initiated by the senior management there was lack of executive level support and the participants</li> <li>- Insufficient knowledge sharing between the members of the system</li> <li>- Lack of in-house technical capabilities (distinctive competencies) in case of faced problems</li> </ul>	<ul style="list-style-type: none"> <li>- Processes have been mainly not changed, there are some new processes that have been added</li> <li>- Through the technology of ISA the process costs has been decreased and operations streamlined.</li> <li>- Promotes speed development and real time process response.</li> <li>- Through the ISA the extent of internal coordination to be achieved was one of the challenges.</li> <li>- As the system was similar, when compared its use and procedures, the employees did not recognize the challenges that they will face with ISA.</li> <li>- Lack of capabilities on external partners’ usability of the system.</li> </ul>

## **Conclusion and Discussion**

Based on the empirical data, this study explored the relationship between individual eBusiness technology and Stimulus (Abraham and Junglas, 2011; Volmann, 1996; Matthews et al. 2017; Wiengarten et al. 2013); Scope (Attaran, 2007; Power and Sighn, 2007; Bak, 2016; Fernie and Thorpe, 2007; Power and Sighn, 2007) and Organisational transformation impact (Power and Simon, 2004; Volmann, 1996; Bak, 2016; Cagliano et al. 2003; Power and Simon, 2004; Wiengarten et al. 2012, 2013). Within this context the current study brings forth new findings in automotive supply chains, in which the individual eBusiness technologies indicated a variance across the supply chains based on;

*Understanding the need for transformation: The Stimulus.* In respect to the stimulus of transformation, the study indicated a significant relationship between stimulus and individual eBusiness technologies. This also highlighted that variances in organizations transformations may differ based on the functions or departments, which often related to incompatible systems and objectives. However, individual eBusiness technologies presented a similar transformation impact with B2B showing a proactive stimulus versus ISA indicating a responsive stimulus.

*Understanding the speed of transformation: The Scope* Although theoretically as stated by Mouritson et al. (2003) “best practice in the supply chain should only be copied and implemented if the objective situational factors are exactly the same, which is very seldom the case” within the automotive industry the scope in the supply chains indicated a similar picture, in which the B2B and ISA has shown a similar supply chain process scope, despite their situational factors such as the company context being not the same.

*The processes of organtional transformation impact.* This was the only finding that indicated differences between the case study findings and the findings of the questionnaires. The case study indicated a revolutionary formulation scope for B2B whereas the questionnaires indicated a contradictory picture. Considering that B2B transformation can take place at one or more levels with different level of complexity within the supply chain it can become problematic and time consuming, leading to a much evolutionary development. This is also in line with the findings of Anastaad and Igrara, (2013), Anderson et al., (1985) and Bak, (2016) which viewed differences in

supply chain transformation scope challenges and addressed that these variances also stems from supply chains needing a varied “time [scale] to adopt new tools and processes” at different levels (Power an Sighn, 2007). In understanding the impact of eBusiness on these three dimensions the automotive supply chains can focus more on developing and improving their competencies and resources to manage the transformation that they are undergoing.

### ***Managerial implications***

Based on the above findings, we would therefore welcome further studies to refine and extend the findings for different eBusiness technologies. Being exploratory in the nature, further studies are needed to explore these relationships between the individual eBusiness technologies and its transformation which may be useful in developing best practices as well as the use of the proposed framework. In particular, this research has highlighted differences in terms of the transformation agenda for B2B and ISA, hence one of the managerial implications is that each eBusiness technology and the transformation agenda needs to be customised in terms of formulation scope. Whereas the intention was to answer the questions and increase our understanding about the transformation phenomena in the context of individual eBusiness technologies the findings indicated differences based on eBusiness technologies on stimuli, process scope and formulation scope, which can be evaluated by the companies prior the application of any eBusiness technology.

### ***Limitations and Further Research Directions***

This study lays the foundation for future research through the establishment of a reliable and valid measure and examination of the transformation impact of eBusiness technologies within the automotive supply chains based on S-S-O framework. There are opportunities as well as challenges for further development and understanding of this transformation constructs and its impact upon supply chains. Therefore, the first limitation of the study refers to the nature of empirical research that has been undertaken in the specific context, which is the automotive supply chains with particular emphasis on two eBusiness technologies, hence it would be useful to test the findings in other sectors and regions.

The case study design also limits the results to a specific supply chain. Hence, it would be valuable to explore and extend this study to wider contexts. For instance, we should



underline that the change associated with B2B and ISA can be a costly and risky, however other eBusiness technology may have different impact upon supply chain transformation. Therefore, further research should be carried out to understand the differences in eBusiness enabled organizational transformation across supply chains. Furthermore, studying failure cases could add also valuable insights to when the transformation fails. In addition, a longitudinal case study design would be also beneficial to examine the causal dynamics of the relationships in the proposed S-S-O framework.

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